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SHOP EQUIPMENT REVIEW

Semi-Annual Résumé of machinery, tools, mechanisms, parts, and materials described in the Shop Equipment News sections of the American Machinist during the first six months of 1930, and also a similar résumé of the Engineering Workshop Equipment sections of the European Edition for December, 1929, to May, 1930, inclusive

OFFERINGS of new equipment during the last six months have been well above the average for similar periods. Compared with the issue of July 18, 1929, the present number shows a 13 per cent increase in the number of American items reviewed and a 23 per cent increase in the European items.

Although six months ago no radical changes had been made in machine tools because of the influence of tungsten-carbide, during the period under review one machine has appeared that is especially designed to use this cutting material, and that is claimed to remove metal at several times the previous rate per applied horsepower. This unusual automatic lathe is hydraulically operated, chain drives actuating the various pumps for the different motions. Clockwise spindle rotation is employed, contrary to usual practice, and feeds to 0.010 in. permit hogging cuts at spindle speeds up to 375 r.p.m. Another maker has put out several machines of conventional design with spindle speeds up to 1,250 r.p.m. As a rule, lathe builders have decided that their products already possessed sufficient rigidity and capacity to employ tungsten-carbide successfully.

Hydraulic feed and rapid traverse motions continue to be featured on most classes of machine tools. Sixteen of the reviewed items are affected: A car-wheel boring machine, two drilling machines, three grinders, two honing machines, four lathes, a milling machine, a bandsaw, a broaching press, and a billet gouger.

Represented among the boring and turning machines are a hydraulically operated car-wheel boring machine with an automatic cycle, and a multiple-operations machine. The latter has been redesigned for production since its inception a year ago and is applicable to small-lot or mass production, the latter by means of a line-up of units and an integral work conveyor.

Drilling machines are offered in profusion—19 items—showing advances particularly in radials. One radial features a Gibbs V-disk transmission and another, hydraulic means for traversing the head, feeding the spindle, and clamping the arm. An upright model makes use of hydraulic feed, while a production-type unit has four stations and feeds the tools up to the work automatically.

All the lathes reviewed show considerable refinement in strength, materials, and appearance. Spindle speeds are higher, as noted previously, and accuracy commensurate to toolroom application is embodied in some of the regular engine types. Two turret lathes show unusual advances. Both units are equipped with two turrets feeding toward each other on a long bed to machine both sides of work held in a central workhead. Several screw machines have been redesigned to meet latest requirements, one machining steel rapidly.

More attractive appearance and greater ease of control are found in the milling machines. One knee-type unit has variable-speed drive through a combination flat- and V-belt driven by two separable cone disks on the motor shaft. A spline miller for large shafts is included in the section.

Shapers show several innovations. Of two railroad types, one, a draw-cut shaper, has an extended ram bearing carried in an overarm to maintain rigidity, while the other is provided with a special extension head for driving-box work.

Steel frames continue to find application in presses and shearing machines. One press has a four-screw slide adjustment of 36 in. to permit varied use in automotive and jobbing shops. One station-type tapping machine will perform several operations on as many as 80 parts per minute.

Among the furnaces offered are a high-temperature model, a conveyor type, a pressure-carburizing unit, and an automatic casehardening unit. One polishing machine has three universally adjustable polishing heads mounted around a revolving table carrying automatically operated chucks. Welding rods developed are for such diverse purposes as hard facings, high-strength requirements, and for use on stainless steels.

English and German makers share the 141 developments in the European section. Most of these items may be classed as heavy machine tools and allied equipment, many being suitable for railroad repair shop operations. Few production machines are shown.

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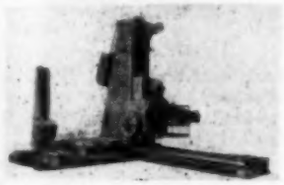
Boring and Turning Machines

—1—

Boring, Drilling, and Milling Machine, Horizontal, 7-Inch

Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol.72,p.352]

Three separate motors furnish power, respectively, to the spindle and milling feed; rapid traverse to the saddle and column, and the movement of the circular table toward and from the column runway. The first two motors are of the variable-speed type. This arrangement provides a wide range of speeds



and feeds without complicated gearing.

The machine has a large floor plate of heavy box construction, and, in addition, a circular table may also be supplied. A separate motor drives the table through a worm and worm wheel. A steadyrest is mounted on a separate carriage and can be bolted to the floor plate or used on the circular table runway. Rapid hand adjustment on the runway is provided. The boring bar has vertical hand adjustment.

To obtain the slow speeds, the spindle is driven through a steel faceplate gear. A separate small motor rapid traverses the spindle and a graduated scale is provided on the column for accurate adjustment. The motor for the saddle is located at the base of the column.

Large bearing surface on the column is provided for the saddle, which has a vertical travel of 10 ft. The saddle is provided with a platform for the operator. For boring and drilling, the machine has eight feeds, and is capable of cutting threads of four different leads. For milling, a wide range of feeds is obtained through the variable-speed motor and supplementary mechanical changes.

—2—

Boring Machine, Horizontal, Universal, No. 44, "Tri-Way"

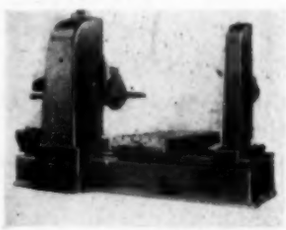
Universal Machine Co., Hudson, Mass. [Vol.72,p.354]

Lubrication of the No. 44 "Tri-Way" horizontal boring machine is by mechanical means, with the exception of a few places. Oiling of all important parts of the speedbox is done by a powerful, geared pump. The oil is forced from the pump to a "Purolator" filter. The head itself is lubricated by means of a pump. The ways of the carriage and table are oiled by means of a one-shot system.

The spindle sleeve is mounted on Timken roller bearings. All spindle driving shafts and gears in the head are made of heat-treated, chrome-nickel steel, and are mounted on ball and roller bearings. The speed box gears are of coarse-pitch, stub-tooth form with very wide faces, and are mounted on six-splined shafts. By the use of an improved vernier attachment, jigs and experimental work can be bored to close limits and the accuracy of the machine is made independent of wear in the feed screws. The attachment does not interfere with the use of the rapid traverse for quick locating and permits the application of the machine to work requiring great range and versatility.

Two models are built to give vertical feeds to the head of 40 and 50 in., respectively. Other specifications which are not the same for these two models are: Maximum distance from table to center of spindle, 42½ and 52½ in.; size of table over-all, 36x75 and 46x75 in., and shipping weights, 29,500 and 32,700 lb., respectively.

Specifications common to both models: Maximum distance from faceplate to outer support, 108 in.; power cross feed to table, 60 in.; power longitudinal feed to carriage on bed, 70 in.; diameter of spindle or main boring bar, 4½ in.; Morse taper hole, No. 6; continuous travel of spindle, 30 in.; travel of spindle, one resetting, 60 in.; number of spindle speeds, 24; range of standard spindle speeds, 8 to 300 r.p.m.; milling feeds (twelve), 0.5 to 11 in. per min.;



boring bar feeds (twelve), 0.13 to 2.7 in. per min.; rapid traverse for milling, 72 in. per min.; over-all length, including drive shaft, 198 inches.

The bed provides wide bearings for the carriage, full support for the gear boxes, and a seat for the motor bracket. Extra equipment includes: special lengths of beds; special sizes of tables; special vertical travel of the head and spindle; vernier attachment on the head, and an end measuring attachment.

A 15-hp., 1,750 r.p.m. motor is recommended.

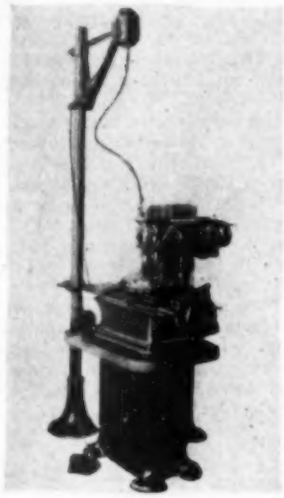
—3—

Boring Machine, Jig, No. 2, Hauser

Index Machinery Corporation, 49 Central Ave., Cincinnati, Ohio. [Vol.72,p.73]

A jig boring machine that will perform boring, drilling, locating, and center punching has been introduced into the United States. This machine is built by Henri Hauser, S. A. Bienne, Switzerland. Its capacity is 8x12 in. with a maximum vertical movement of 12 in.

The jig boring machine depends for accuracy on the use of



screws. The slides are actuated by micrometer screws, the drums of which are divided into hundredths, while the verniers enable reading to 0.001 in. These screws are employed only for bringing the various attachments into position. When the machine is in use, the screws are not touched. Adjustments are made through fiber handwheels.

The drums are adjustable on the screws so that they can be set to zero at the start of the work. End play is eliminated by the use of counterweights, which are released by means of a lever when the machine is not in use.

The manufacturer guarantees that the maximum error of displacement of the slides does not exceed 0.0005 in., while the tools supplied with the machine are interchangeable with a maximum difference of 0.0001 in. Divisions of the standard scale have no error exceeding 0.0002 inch.

The machine can be used for center punching as well as drilling, the holder for the punching device and microscope being adjusted vertically by a rack and pinion. Boring tool and toolholder are co-axial. The locating microscope magnifies 30 times. The goniometric microscope magnifies 20 times.

Drive is from a variable-speed motor through a flexible shaft suspended above the machine. The drilling spindle has a vertical travel of 2¾ in. Up to ¾-in. holes can be bored with accuracy. Special end mills may be supplied for the quick opening and sizing of holes.

The working surface of the table is 9¾ by 17 3/16 in. A circular graduated table 11 in. in diameter is also furnished.

Through a calibration scale and microscope, the accuracy of the machine can be checked periodically. The standard scale is 12 in. long and is divided into tenths to provide for convenient measurement.

—4—

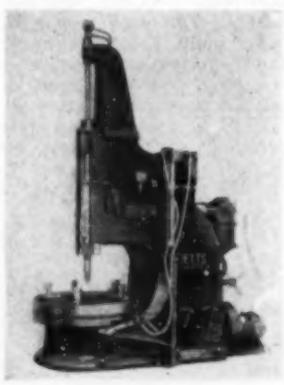
Boring Machine, Car-Wheel, Oilgear-Feed, Heavy-Duty, "Betts"

Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol.72,p.856]

The entire operation of the feeds and rapid traverse is controlled by oil pressure, permitting heavier feeds and faster production, and at the same time eliminating feed gearing. Further, by the use of this feed, the entire cycle of boring operations is automatic.

Placing the car-wheel on the table is effected by means of a hoist. This hoist may be either mechanically or air operated. As the machine is started, the wheel is chucked automatically. The boring bar, on which are the roughing cutter, the finishing cutter, and the chamfering cutter, descends quickly by rapid traverse as soon as the feed lever is thrown in. As the roughing cutter reaches the work, its speed is cut down automatically to exactly the proper feed for rough boring. When the rough boring is completed, the rate of feed changes so that the finishing cutter enters the work automatically at the proper finishing feed. After the finishing cut is completed, the edge is automatically chamfered by the chamfering cutter.

Four feeds are provided for the table, these being obtained by means of hardened steel gears. The machine can be stopped at any point in the work, or the feed can be changed. When desired, a hub facing head may be applied to this car-wheel boring machine.

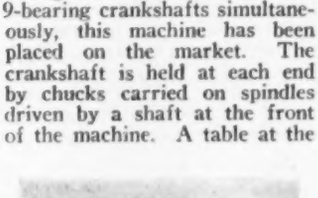


— 5 —

Turning and Cheeking Machine, Crankshaft, "Melling"

Crankshaft Machine Co., Jackson, Mich. [Vol.72,p.35]

For turning the bearings and facing the cheeks of either 7- or 9-bearing crankshafts simultaneously, this machine has been placed on the market. The crankshaft is held at each end by chucks carried on spindles driven by a shaft at the front of the machine. A table at the



rear carries the tool blocks, each of which carries two cheeking tools and one bearing turning tool. Forward feed of the table advances the tools simultaneously to the work. Motion for this purpose is carried to a shaft in the rear for chain drive.

Each tool block is provided with a roller to support the pressure of the cut. Each tool block is pivoted and, as it feeds into the work, the roller is held in contact with the top of the bearing to be turned, thus preventing rocking of the tool block.

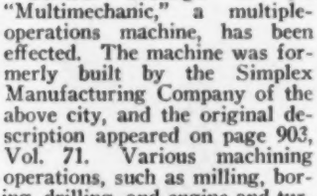
The steadyrest consists of a pivoted bar, at the upper end of which there is a link carrying a roller to engage the center bearing on the crankshaft. With this machine, it is not necessary to spot a bearing for the steadyrest before starting the machine.

— 6 —

Turning Machine, Improved, "Multimechanic"

Production Engineering Co., 1848 West Broadway, Spokane, Wash. [Vol.72,p.888]

General redesign of the "Multimechanic," a multiple-operations machine, has been effected. The machine was formerly built by the Simplex Manufacturing Company of the above city, and the original description appeared on page 903, Vol. 71. Various machining operations, such as milling, boring, drilling, and engine and turret lathe work, may be handled,



either on a single machine or on a line-up.

On the Nos. 7 and 14, respectively, the maximum swings are 26 and 42 in. over the bed. The work tables are 36x10 in. and 42x12 in., and the distances between centers on a 10-ft. bed are 60 and 72 inches. Vertical spindle travels for the Nos. 7 and 14 units are 7 and 14 in., respectively, and the vertical feeds from 1 to 2 in. per minute.

Both machines have 12 spindle speeds, the right-hand spindle giving 7 to 1,472 r.p.m., and the left-hand spindle 28 to 368 r.p.m. The lengths of the cross table feed are 24 in. and 30 in., respectively.

Quick change gears give 2 to 64 threads per inch. These gears are of hardened steel and run in oil. Double-ended spindles mounted on the two units are 23½ and 30 in. long, respectively.

The spindles are reversed, elevated, or lowered individually or together. The workheads are turreted on large annular dovetail ways. Quick reverse of the vertical feeds is provided by levers on the heads, and longitudinal feeds by levers at the aprons.

The machine has been particularly designed for applications where changes in design of the work pieces are frequent, and to take care of small lot production of special parts.

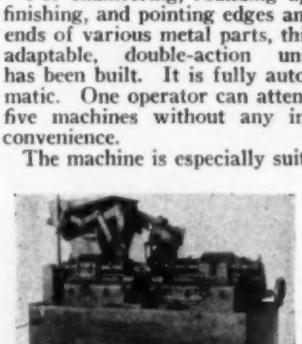
— 7 —

Turning Machine, Automatic, Double-End

Economy Engineering Co., Willoughby, Ohio. [Vol.72,p. 973]

For chamfering, rounding up, finishing, and pointing edges and ends of various metal parts, this adaptable, double-action unit has been built. It is fully automatic. One operator can attend five machines without any inconvenience.

The machine is especially suit-



able for rapid pointing and chamfering of such parts as roller bearings, valve tappets, studs, and a wide variety of similar work. If desired, it can be furnished equipped with a grinding spindle. It can also be adapted for handling headed parts.

A motor is installed in the base with a silent chain drive. Specifications: capacity, diameter, 1 in., lengths, 5 in.; width, 35 in.; height, 56 in.; length, 72 in.; net weight, 3,200 lb., and motor required, 3 hp.

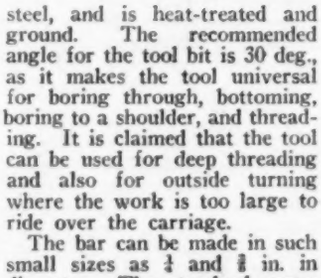
— 8 —

Boring Tools, Wrenchless

Aulenback Tool Co., 18 Grafton St., Worcester, Mass. [Vol. 72,p.35]

Intended for boring mills, turret lathes, and miscellaneous boring, the wrenchless boring bar illustrated employs a wrenchless, hand-operated locking device for loosening and tightening toolbits. By a slight turn of the handle toward the operator, the cutting bit is loosened and can be taken out for regrinding. After the bit is replaced, a slight turn of the handle away from the operator tightens it.

The bar itself is made and drilled from one-piece alloy



steel, and is heat-treated and ground. The recommended angle for the tool bit is 30 deg., as it makes the tool universal for boring through, bottoming, boring to a shoulder, and threading. It is claimed that the tool can be used for deep threading and also for outside turning where the work is too large to ride over the carriage.

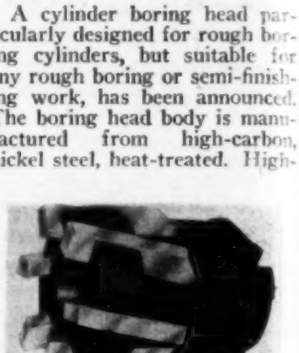
The bar can be made in such small sizes as ¼ and ⅜ in. in diameter. The standard range varies from ⅜ to 2 in. in diameter and from 9 in. to 16½ in. in length. Toolbits accommodated are ⅜ to ½ in. square.

— 9 —

Boring Head, Cylinder

Davis Boring Tool Co., 6200 Maple Ave., St. Louis, Mo. [Vol.72,p.541]

A cylinder boring head particularly designed for rough boring cylinders, but suitable for any rough boring or semi-finishing work, has been announced. The boring head body is manufactured from high-carbon, nickel steel, heat-treated. High-



speed steel blades are furnished regularly, but Stellite and tungsten-carbide-tipped blades can be supplied.

All blades of this boring head are locked from the front. The blades are placed at an angle in the body and bear against the back and bottom of the slots to give a full metal-to-metal bearing and to minimize chatter.

Roughing heads of this type are constructed so that the blades recede from the diameter at an angle. When the blades need regrinding, they are brought forward uniformly and simultaneously by means of a ring adjusting nut, and reground on the face only. Semifinishing heads are similarly constructed with the exception of a short land on the blade to give a smooth bore. Boring heads of standard dimensions can be furnished with front pilots, rear pilots, shanks, or drives to suit requirements.

Drilling Machines

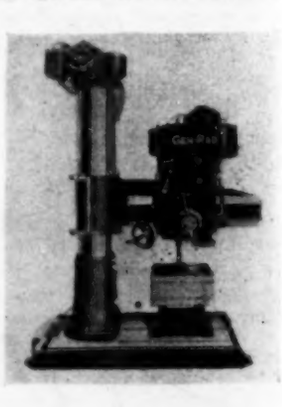
— 10 —

Drilling Machine, Radial, "Gen-Rad"

General Radial Drill Co., 1767 Elmore St., Cincinnati, Ohio. [Vol.72,p.425]

Mechanical feed is employed in the "Gen-Rad" radial. A Gibbs V-disk transmission in the head furnishes speeds up to 3,000 r.p.m. in twelve steps. Up to 2-in. twist drills can be handled. Two sizes of the machine are available, the column diameters being 9 and 11 in., and the arm movements, 3 and 4 ft. Raising and lowering of the arm is effected by the motor mounted at the top of the column. Clamping of the arm is accomplished by split rings at the top and the bottom of the barrel.

A second motor mounted on the head drives the spindle and the feed. Power is transmitted through bevel gears to the spindle and to the feed change gears by a reversible clutch. Thus, tapping operations can be performed. For sensitive drilling operations, this clutch may



be disengaged and the spindle fed by hand. Push-button controls on the head govern the action of both motors.

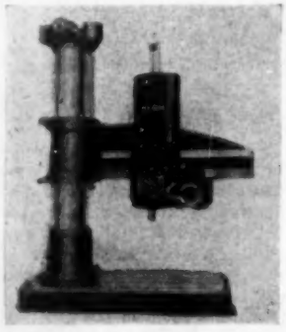
— 11 —

Drilling Machine, Radial, "Hy-Rad"

General Radial Drill Co., 1767 Elmore St., Cincinnati, Ohio. [Vol.72,p.425]

Hydraulic power is derived from the motor-driven pump on the head, to feed the spindle, traverse the head, and clamp the arm. The pump motor also drives the speed change gear through chains. This machine is built in column diameters of 15, 17, and 19 in., and with arms from 4 to 8 ft. The feed may be adjusted quickly to compensate for variations in hardness of the material.

A motor mounted on the back of the head drives the pump and also the gears that furnish the speed changes. Twelve changes are obtained, these changes being indicated by a direct-reading dial. In the



opening, two rates of speed are recorded. Any one of twelve rates is obtained and is multiplied by selective gearing on the spindle, thus making any one of 24 speeds available.

The splined spindle is mounted in a sleeve. Provision is made for engaging either the worm wheel or the spiral gear to furnish the high or low ratio as desired. Spindle speeds range from 20 to 1,058 r.p.m.

The piston for feeding the spindle hydraulically is mounted directly at the top. The hydraulic spindle feed range is from 0 to 100 in. per minute. Provision is also made for moving the spindle up or down by hand.

A valve is placed at the rear of the head for the admission of oil in either direction to a cylinder which traverses the head on the arm. The hydraulic cylinder is secured to the head and moves with it. A second valve controls another cylinder, the piston rod of which is connected to a toggle that actuates the upper clamping ring. Push-button controls are furnished, one for the arm motor and the other for the pump motor.

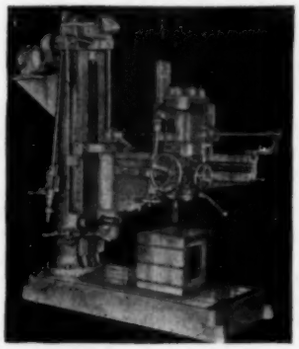
— 12 —

Drilling Machines, Radial, "Low-Hung-Drive"

Western Machine Tool Works, Holland, Mich. [Vol. 72,p.506]

This line of radial drills is made in sizes from 3 to 8 ft. and column diameters of 14 to 22 in. Power is applied to the spindle at the large end near the drill, consequently, the torsional strain on the spindle is reduced to a minimum. The arm is of double-well section and swings in ball and roller bearings in the trunnions of the saddle.

The speedbox provides eight



changes. The elevating screw nut is made of bronze and is recessed into and bolted to the saddle. The screw itself is provided with a ball thrust bearing.

All gears in the head, including the large bull gear, are made of chrome-nickel alloy steel, heat-treated and hardened. The fast speed in the head is engaged through a friction clutch identical with the reverse frictions. The backgear, or slow speed, is engaged through a jaw clutch, and the backgears themselves are of wide face and coarse pitch.

Timken tapered roller bearings are used throughout the drillhead. The head is regularly furnished with a tapping attachment. One lever spindle controls the entire operation of the head. Tapping is accomplished through bevel gears on the horizontal drive shaft at the rear of the head.

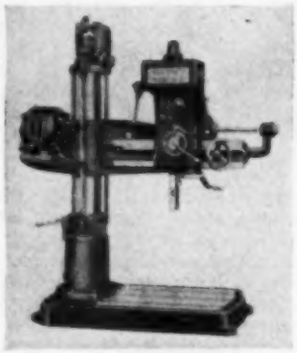
Several types of drives are available, these being direct-connected motor drive, Texrope drive, and countershaft drive. Special non-reversible radials are available for boiler shops or for plate work.

— 13 —

Drilling Machine, Radial, 3-Ft., No. 2A

Cincinnati Bickford Tool Co., Oakley, Cincinnati, Ohio. [Vol. 72,p.936]

This is a lighter machine than the "Super Service" radial, but has the same features of



constant-speed drive and speed changes effected at the head. It is built with a 3-ft. arm on a 9-in. column, and with a speed range from 71 to 1,500 rev. per minute.

Among the features are: twelve-speed head, incorporating ball and roller bearings; centralized control; driving clutch operated at constant speed, and speed range for ⅜- to 4-in. drills. Constant-speed belt drive can be had also. Cutting lubricant is contained in the base.

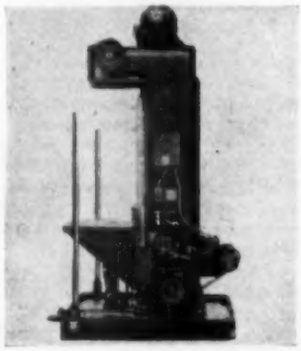
— 14 —

Drilling Machine, Upright, Hydraulic-Feed, Multi-Head

Buhr Machine Tool Co., Ann Arbor, Mich. [Vol.72,p.428]

A hydraulic-feed, multi-head drilling machine embodying some of the features of the concern's cam-operated, multi-head machine, has been placed on the market. For the majority of operations, the cycle consists of rapid advance, regular feed, and rapid return. Adjustable stops are mounted on the table. The capacity of the machine with a 3-in. cylinder is 3½ tons pressure.

The head has a 15-in. flange to which multiple heads are bolted. For single-spindle work, auxiliary spindle arbors up to No. 6 Morse are furnished, or special drive can be



used. The head driving motor is mounted on top of the machine. Drive is through either Texropes or a silent chain and gearbox. Pick-off gears are used for the speed changes.

The distance from the spindle to the face of the column is 16 in. Instead of riser blocks, the column is furnished in different heights. The standard height of column gives a distance between the table and the head of 52 in. The stroke is 10 inches.

Oil cylinders are furnished with length of stroke to suit the operation. The Oilgear unit is set into a separate chamber cast integral with the column. The pump motor is mounted on the back of the column and drives through Texropes.

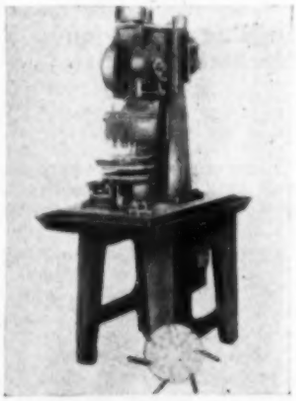
A self-locking mechanism is embodied in the table to adjust the table height with relation to the piston rod. This adjustment is 3 in. on the standard machine. Two stanchions, consisting of 2-in. steel bars, are adjustment in the base.

— 15 —

Drilling Machine, Upright, Semi-Automatic

Langelier Manufacturing Co., Providence, R. I. [Vol.72,p. 638]

The machine consists of a standard No. 21 automatic drilling unit mounted on an upright column bolted to the planed surface of the horizontal table. The automatic drilling unit is equipped with a drilling and reaming head of eight spindles. It is used in conjunction with a seven-station, automatically operated, circular indexing dial, also bolted to the table. A dial, operated by a face cam on the



automatic drilling unit, is connected through levers and a connecting rod to a pawl and ratchet wheel on the indexing fixture. A positive lock is also provided for accurately locating and holding the dial in position.

The automatic drilling unit is belt driven by a 1½-hp. motor attached to the rear of the column. The machine can be run continuously or arranged to start and stop at each drilling cycle. A feed cam on the automatic drilling unit gives the drills fast advance, drilling feed, and fast return.

Floor space occupied, 28x44 in., weight, approximately 1,800 pounds.

— 16 —

Drilling Machine, Sensitive, Texdrive, No. 621

The Avey Drilling Machine Co., Cincinnati, Ohio. [Vol.72, p.316]

Texrope drive has been applied to the No. 621 sensitive drilling machine, which has a four-speed motor, double fan ventilated. The motor is ad-

justably mounted on the back of the column. Two sets of sheaves provide a high and low range of speeds, there being eight in all. Overload and low-voltage protection are furnished, together with a reset relay.

— 17 —

Drilling and Tapping Machine, Sensitive

Landeau Machine & Drill Press Co., 200 Broadway, New York, N. Y. [Vol.72,p.750]

Four spindles are located in the head of the combination drilling and tapping machine,

and may be divided two and two for drilling and tapping, or three and one for the same operations, or only one spindle need be used. Each spindle, moreover, has independent adjustment, and can be started or stopped quickly.

For repetition work, the head may be indexed. Before the spindle is in alignment with the work, a centering device prevents the feed lever from operating. It is claimed that the tapping spindles are very sensitive in operation. An arrangement is provided whereby a tap striking the bottom of the hole reverses automatically.

Specifications: spindle taper, No. 1 Morse; chuck capacity, ½-in.; height of machine, 62 in.; weight, 300 lb.; motor, ¼ hp.; table size, 9x13 in.; floor space, 20x34 in.; travel of table, 7 in.; speeds of drilling spindles, 650 r.p.m., 1,100 r.p.m., and 1,800 r.p.m.; tapping speeds, 110, 190, and 310 r.p.m.; travel of main drive spindle, 3 in.; travel of drilling spindle, 2 in., and travel of tapping spindle, 1 inch.

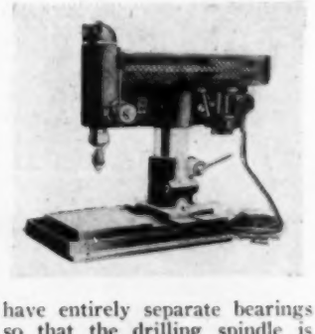
— 18 —

Drilling Machine, Sensitive, High-Speed, "Express"

Ambold Machine Tool Corporation, 50 Church St., New York. [Vol.72,p. 893]

Spindle speeds from 1,750 to 20,000 r.p.m. are found on the "Express" high-speed, drilling machine. This machine is of German manufacture. Holes can be drilled up to ⅜ in. in light metals, 5/16 in. in brass, and ¼ in. in steel.

The spindle and the step cone



have entirely separate bearings so that the drilling spindle is free from belt tension. Feed is obtained by means of a sensitive lever. A brake is attached to the spindle and the stop gage is graduated. Both bench and column types may be had.

Specifications of bench type: distance from column to center of spindle, 7¼ in.; depth of holes drilled, 2⅜ in.; spindle taper, No. 2 Morse; maximum distance between drill chuck and table, 7½ in.; vertical adjustment, 3 in.; working surface, 11¾ in. x 9¾ in.; height, 2 ft. 10 in.; bench space required, 2 ft. 11 in. x 1 ft. 8½ inches.

— 19 —

Drilling Machine, Horizontal, High-Speed

Buhr Machine Tool Co., Ann Arbor, Mich. [Vol.72,p.505]

Drilling oil return holes in pistons and similar operations can be done in this horizontal high-speed drilling machine, and either automatic or semi-automatic operation can be employed. When operated with an automatic cycle, the time per cycle is six seconds, or a production of 10 pieces per minute is realized. Larger machines have been built, however, the maximum size holes drilled being 1⅛ inch.

The heads are separate units and can be spaced independently of each other. Up to 14 heads have been employed upon one machine in a single deck, although other types may be had with double decks.

The spindles are driven by a central ring gear and are quickly adjusted for depth by a self-locking feature. All moving parts are mounted on ball bearings and are fully inclosed. Feed is derived from a scroll cam moving all heads in unison. The cycle consists of rapid approach to the work, regular feed while drilling, and rapid return. The feed may

be stopped instantly at any point on the scroll. Pick-off gears are provided.

The machine can be furnished for holes at an angle and with either chain or Texrope drive. The motor required is 3 hp.

Floor space, 4 ft. square; weight, approximately 2,500 pounds.

— 20 —

Drilling Machine. Horizontal, Bench-Type, Duplex, High-Speed

Langelier Manufacturing Co., Providence, R. I. [Vol.72,p. 821]

Simultaneous drilling or counter-sinking on the ends of rods or similar work can be done on a production basis. The drilling heads are bolted to the bed in a fixed position to suit the length of work. Spindles are heat-treated and ground, and run in phosphor-bronze bearings. They are provided with ball-thrust bearings, and are mounted in feed sleeves having a maximum range of 3 in. Each feed sleeve has a drilling stop.

The spindles can be run at a maximum speed of 6,000 r.p.m.,

and have capacity to take up ⅜-in. drills. They are fitted with No. 1A or 2A Jacob chucks. Drive to the spindles is effected by ball-bearing pulleys. The feeds are operated by a hand lever on the right-hand head.

Bench space, 36x10 in.; weight, approximately 200 pounds.

— 21 —

Drilling and Boring Machine, High-Production, Multi-Head, Inverted

Buhr Machine Tool Co., Ann Arbor, Mich. [Vol.72,p.277]

Freedom from chips around the cutting tools is assured by the inverted-head construction of this multi-head production drilling and boring machine, in which the index fixture is mounted on top of the machine and is operated through a bevel gear and pinion by a hand-wheel. Either automatic or semi-automatic operation may be had. The drills or boring tools feed upward to the sixteen pieces, which are held in a four-position index fixture, with four pieces to each position. The first or front position is used for loading and unloading; the second position for rough boring; the third position for finish boring, and the fourth position

for reaming. The time required per cycle is 44 seconds or 11 seconds per piece.

This method of using tools feeding up into the work is well adapted to the use of pilots on the cutting tools. The machine is best suited for either drilling

or boring long holes. Other operations, such as counterboring, hollow-milling, and facing, can be performed.

The cycle consists of rapid approach to the work, regular predetermined feed, and rapid return to the starting position. The feed may be stopped at any point by means of a pedal. A safety clutch is built into the feed shaft. Pick-off gears are provided.

Gears and shafts are mounted on either Timken tapered roller bearings, double-row ball bearings, or Hyatt roller bearings. Weight of the machine, without fixtures, 20,000 pounds.

— 22 —

Drilling Machine for Dies, Pneumatic, on Adjustable Stand, No. 34-3, "Hercules"

The Buckeye Portable Tool Co., Dayton, Ohio. [Vol.72,p. 392]

Designed especially for use on large dies and castings, the No. 34-3 pneumatic drill, mounted on a portable-adjustable stand has capacity to drill 1¼-in. in steel. It is equipped with a No. 3 Morse taper socket and has a feed of 7 in. Maximum elevation of the tool is 45 deg. above and 25 deg. below the horizontal. The stand may also be raised or lowered, maximum height being 44½ in., minimum, 32½ inches.

The pedestal has a three-leg base, with double-wheel rollers

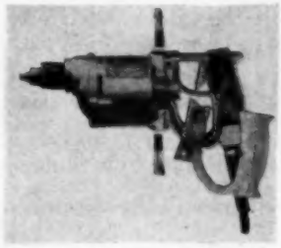
on each leg. In the base is an oil reservoir with a capacity of ½ gal. The air is controlled by a foot throttle, leaving the hands free. An adjustable needle valve connects the oil reservoir to the air hose just above the throttle and permits the proper amount of oil to pass through the hose to the rotor.

— 23 —

Drilling Machine, Portable, Electric, with "Bohnalite" Housings

United States Electrical Tool Co., Cincinnati, Ohio. [Vol.72, p.545]

Bohnalite housings are now being used on all "U. S." ¼-, ⅜-, and ½-in. portable electric drills, also on the Nos. 1 and 2 screw



drivers, valve grinders, and tappers. This metal is employed instead of aluminum, because the tools stand up better and longer.

Accompanying this change is the redesign of the ¼-, ⅜-, and ½-in. special drills, which permits removing one side of the handle and housing end in one piece. The brushes also are quickly removed and replaced. Improved lines of the handle give increased gripping ease.

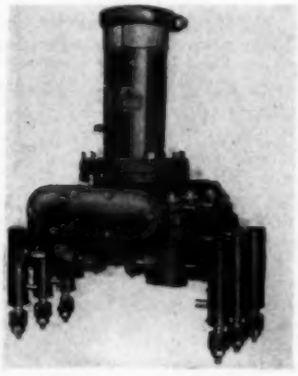
— 24 —

Drilling and Tapping Heads, Sliding-Arm Type

Buhr Machine Tool Co., Ann Arbor, Mich. [Vol.72,p.543]

Unlimited range of adjustment is the principle feature of the sliding-arm type drilling and tapping heads. The minimum adjustment is governed by the diameter of the arm body, but the maximum adjustment is controlled by two factors; the size and shape of the drillhead housing, and the length of the arm slide. Standard housings and arms are employed on sizes up to those used on the firm's fully adjustable heads. Special housings are used where greater adjustments are required. They are furnished preferably in either round or rectangular form.

Two distinct methods of



mounting may be used with the arms and the transmission which drives them. On the first type of head, the arm transmission pivots at the center proper, being centered on a dowel. At the same time the arm can slide in or out, the amount of movement depending upon the length of the arm slide. The other method consists of mounting the units, each unit consisting of an arm and the transmission which drives it, so that each individual unit may slide backward or forward, and can be set at any point within the range of the drillhead housing. The minimum adjustment is governed by the diameter of the arm body, and the maximum by the size of the drillhead housing and the length of the arms. Different speed ratios may be obtained for the arms as required, and they can be furnished with an individual reverse for tapping. In the set-up each spindle is independent.

The heads are made in capacities for ¼-, ⅜-, 7/16-, and ½-in. drills. The minimum distances between centers of the spindles for these heads are 1¼, 1½, 1¾, and 2½ in., respectively.

— 25 —

Drilling Stand, Radial, with Sensitive Feed

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.72,p.282]

A radial drilling stand with sensitive feed can be furnished to take all portable electric drills up to and including the ⅝-in. size. The lever feed of this device is operated through a rack and pinion in a manner similar to a drill press, thereby

permitting sensitive control. The motor-holding brackets are designed so that the portable drill can be attached without removing any part.

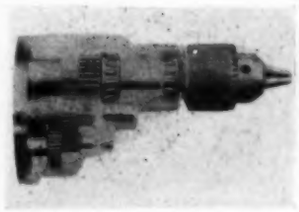
Vertical adjustment without resetting is 7½ in., and vertical adjustment up and down on the main column is 13 in., making the total vertical adjustment 20½ in. The arm will swing in a complete circle. Maximum arm reach from the column to the drill spindle is 13 in. The drill stand weighs 150 lb. This radial drilling stand is also made with suitable wall brackets.

— 26 —

Spindles, Chuck, Improved

The United States Electrical Tool Co., Cincinnati, Ohio. [Vol.72,p.503]

An additional roller bearing is now being included on the chuck spindles of the ½- and ⅝-in. heavy-duty drills manufactured by the above concern. This construction provides for the double thrust that occurs in cylinder reconditioning work, and means easier operation and longer drill life.



— 27 —

Chuck, for Portable Drills, "Ettco"

Ettco Tool Co., Inc., 594 Johnson Ave., Brooklyn, N. Y. [Vol.72,p.241]

A hand-operated drill chuck suitable for use with portable electric or air drills has been developed. No key, collar or spindle locks are necessary, hand operation sufficing.

The nose is bored to receive

three jaws and is fastened to an internally threaded sleeve. A thrust assembly, to which the jaws are attached, screws up or down with the threaded sleeve. The above parts, or body of the chuck, are mounted on and revolve around a driver, which attaches to the electric drill spindle or an arbor. The square section of the driver fits very loosely onto the thrust screw. Turning the body of the chuck about the driver and screw causes the thrust assembly to travel up or down, and the jaws to open or close. As long as the jaws barely touch the drill, it will tighten itself automatically in accordance with the load applied.

The chuck is made in four sizes for ¼ to ½ in. drills, the sizes being ¼, ⅜, ½ and ½ inch.

— 28 —

Chuck Drill, 2-Jaw, "Little Giant"

Westcott Chuck Co., Oneida, N. Y. [Vol.72,p.1045]

Tool steel jaws are employed in this "Little Giant" 2-jaw drill chuck, three strong gibs being provided to guide the jaws. The

screws employed are of special alloy steel. Features common to the "Improved," "Double Grip," and "Auxiliary Screw" drill chucks are incorporated.

The plate on the face of the chuck prevents the use of larger drills than the rated capacity and also adds strength to the body. The hole in the hub of the chuck is tapered to take an arbor, but can be bored and threaded to fit a template of the spindle on which the chuck is to be used.

Capacities available are 0 to $\frac{1}{4}$ in., 0 to $\frac{3}{8}$ in., 0 to $\frac{1}{2}$ in., 0 to $\frac{3}{4}$ in., and 0 to 1 in.

Gear Cutting and Burnishing Machines

— 29 —

Generators, Bevel-Gear, "Reinecker"

George Scherr Co., 142 Liberty St., New York, N. Y. [Vol.72,p.635]

Both straight and spiral gears can be cut on the six Reinecker precision bevel-gear generators, available to cut gears from $\frac{7}{16}$ to 43-in. in diameter. All sizes, except the first, have single pulley drive, and all feed and speed changes are obtained by gearboxes operated from one position.

The second, third, and fourth sizes have an adjustment in the ram saddle, thereby increasing their range, especially on pinions integral with long shafts.

These machines work on the self-generating principle and index the gear blanks from tooth to tooth after each stroke. A plane crown gear of 180-deg. pitch angle is assumed, the tooth

outlines of which are rectilinear flanks running to the apex. The cutting tool represents the tooth of such a plane gear and the gear to be planed or cut unrolls automatically on the assumed crown gear. A set of triangular planning tools cutting on the flat sides is employed to generate the involute curve from an exact central position. The standard pressure angle is 15 degrees.

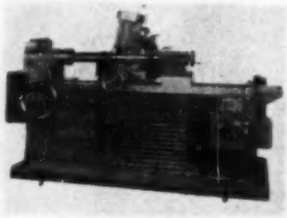
For roughing and finishing, the diametral pitch capacity is 8 DP for the No. 0 size and $1\frac{3}{4}$ DP for the No. 4 size, the largest of the six machines. The approximate weights range from 1,650 to 24,650 pounds.

— 30 —

Hobbing Machines, Spur Gear and Spline, Nos. 5-M and 6-M

Adams Co., Dubuque, Iowa. [Vol.72,p.935]

The scope is limited to production of multiple-splined shafts and spur gears. Power is derived from a motor in the base and transmitted through a multiple-disk clutch and silent



chain to an eight-speed, sliding-gear transmission.

The cutter head incorporates a patented, balanced drive. This spindle is mounted on Timken bearings. A large vernier is provided to set the head to any required angle, and a micrometer dial on the carriage facilitates setting to depth.

The spindle nose contains a double taper for the insertion of a center or collet chuck jaw. A pump in the base supplies lubricant to the transmission drive shaft, leadscrew bearings, carriage mechanism, and spindle.

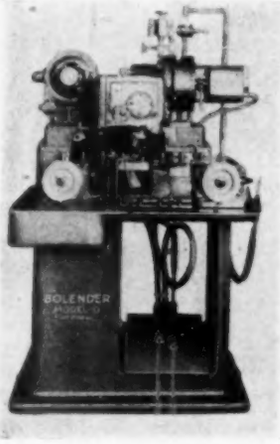
The No. 5-M hobber has capacity up to 48 in. between centers, and the No. 6-M up to 24 in. Standard machines are designed to handle shafting up to 3 in. diameter.

— 31 —

Burnishing Machine, Gear, Model O, "Bolender"

City Machine & Tool Works, 1517 East Third St., Dayton, Ohio. [Vol.72,p.782]

The Model O will handle gears from $\frac{3}{4}$ to $2\frac{1}{4}$ in. outside diameter by $\frac{1}{2}$-in. face. The three burnishing rolls are made of hardened steel. The front roll is rotated by power and carried on a fixed center, while two rolls in the rear are mounted on spindles carried on a slide. When a pedal is depressed, it withdraws the rear burnishers, and at the same time a link mechanism pulls forward the conveyor belt on which the gears are carried. The desired



load is obtained by means of an air-pressure regulating valve.

The driven burnisher runs for a specified number of revolutions. After these, a mechanical tripping device throws a drum-type switch used in conjunction with a magnetic switch. This reverses the direction of rotation on the burnishing rolls and gears through the same number of revolutions, after which the switches are again tripped automatically to stop the rotation.

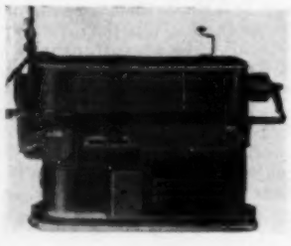
— 32 —

Burnishing Machine, Gear, Model 2, "Bolender"

City Machine & Tool Works, 1517 East Third St., Dayton, Ohio. [Vol.72,p.784]

On this machine the work is dropped through an opening in the cover onto a mandrel of suitable form. This mandrel is only an approximate locator, so that the gear flows between the masters and is burnished to the pitch line.

One burnisher is driven by power and the other two burnishers are loosely mounted on spindles carried by a slide. Adjustment of this slide for center distance is accomplished by a crank. Vertical adjustment of



the mandrel is accomplished through a screw.

The arrangement of the electric reversing mechanism is the same as on the Model 0, described under Item 32. An air valve applies pressure to the burnishing rolls.

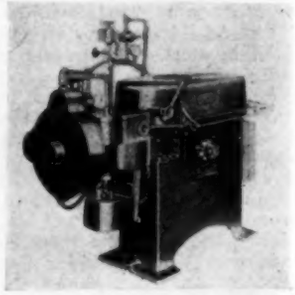
During burnishing, the gears lie in a horizontal position so that there is no overhang or unevenness in pressure due to uneven weight distribution. To start the burnishing cycle, it is merely necessary to depress the switch handle. The air pressure is engaged and disengaged by a lever.

— 33 —

Burnishing Machine, Gear, Model 1, "Bolender"

City Machine & Tool Works, 1517 East Third St., Dayton, Ohio. [Vol.72,p.1049]

The Model 1 gear-burnishing machine has the same mechanical-electrical control as the Models 0 and 2 units described



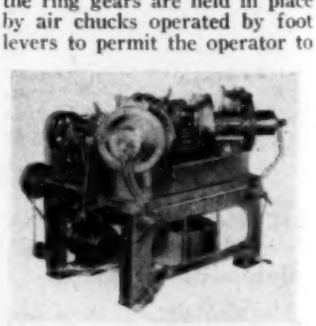
under Items 32 and 33 of this section. It is designed to fill production requirements and does not necessitate a large capacity or oversize construction of the Model 2 unit.

— 34 —

Chamfering Machine, Ring-Gear-Flywheel

W. C. Lipe, Inc., Syracuse, N. Y. [Vol.72,p.858]

This machine, designed to chamfer two ring gears at one time, is electrically driven, and the ring gears are held in place by air chucks operated by foot levers to permit the operator to



use both hands for loading and unloading. The average loading and unloading time is 12 seconds. A master indexing ring is used for indexing. An internal form ground hollow

mill is used for the chamfering operation.

The machine will chamfer ring gears at the rate of 80 teeth per minute on each spindle. One operator can handle two machines placed front to front.

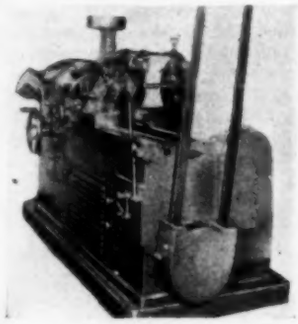
The machine is equipped with two 1-hp., 1,200-r.p.m. motors, making it possible to run one spindle at a time. The over-all floor space required is 61½ x 44 in., and the total height is 50¾ in. Distance from center of the work spindle to floor is 39¾ in. The net weight, including the motors, is 3,080 pounds.

— 35 —

Belt Drive for Gear Hobber and Thread Miller

Adams Co., Dubuque, Iowa. [Vol.72,p.935]

Belt drive for the above concern's gear hobber and thread miller is now available. It has been designed for those requiring connection to a lineshaft, a single pulley being employed. The driving shaft is reversed to extend through the wall of the machine for the mounting of the drive pulley, support being given by a Hyatt roller bearing. A cast-iron belt guard is provided, in addition to a countershaft.

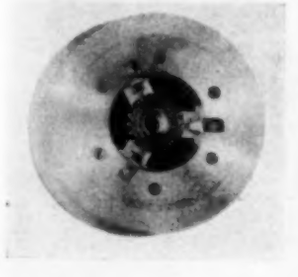


— 36 —

Chuck, Gear-Grinding, "Bolender," No. 3

City Machine & Tool Works, 1517 East Third St., Dayton, Ohio. [Vol.72,p.672]

A No. 3 size has been added to the line of Bolender gear-grinding chucks. The features are similar to those in the description on page 909, Vol. 71, of the *American Machinist*. The No. 3 chuck is power operated and has a capacity for 51-tooth, 6-8 pitch, and smaller, gears.



Grinding, Honing and Lapping Machines

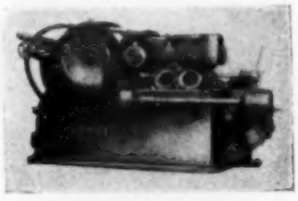
— 37 —

Grinder, Plunge-Cut, Semi-Automatic

Cincinnati Grinders, Inc., Cincinnati, Ohio. [Vol.72,p.31]

A semi-automatic plunge-cut grinder, which embodies in its design an adaptation of the center-type principle of grinding to the units usually employed in centerless grinding, has been developed. The framework of the No. 3 centerless grinder serves as the basic unit about which the machine is constructed. In place of the regulating or feed wheel used on centerless grinders, an extended spindle, employed as a work arbor, is supplied. Parts similar to clutch facing rings, transmission stub shafts, disks of various types, and brake shoes are mounted on a hollow mandrel placed on the spindle. A bayonet lock secures the mandrel quickly.

Movement of the work slide to the grinding wheel is cam controlled. The infeed work slide is arranged for a maximum reciprocation of ¾ in. and also for an up and down oscillation. An individual motor drives the reciprocation and oscillation units. A cam controls the oscillation, or up and down movement, of the work slide. All of these movements are automatic.



By operating on the plunge-cut principle, a fast rate of stock removal is obtained. Provision for this is made by equipping these machines with built-in motors having ratings as high as 40 hp.

Work up to 15½ in. in diameter can be accommodated. The 10-in. grinding wheel provides sufficient grinding contact for handling a large number of parts in one cycle.

— 38 —

Grinder, Universal, Motor-Driven, "Bath"

Fitchburg Grinding Machine Corporation, Fitchburg, Mass. [Vol.72,p.203]

Individual motor drive to each of the motions is now featured in the "Bath" universal grinder, which has been redesigned by the above concern. Four motors are used on the machine: the ¼-hp. headstock motor, the ¼-hp. motor for the water pump, the 3-hp., 1,725 r.p.m., spindle-drive motor, and the ¾-hp., 1,725 r.p.m., traverse drive motor attached to the knee. The last two motors are furnished by the customer. Other improvements are: the surface attachment has been changed to give more simple and sturdy support; the traverse gearbox has been redesigned to give longer wear; and the reversing mechanism has been redesigned.

To set the machine up for surface grinding, the knee, cross-slide, and table are swiveled 90 deg. on the top of the 30-in. base. A coarse, automatic cross-feed is furnished.

For internal grinding, the internal arm which supports the internal spindle is clamped rigidly to the face of the column over the dovetail. The driving pulley is then screwed onto the nose of the main spindle. The wheelhead has vertical movement only.

Five speeds are obtained in the headstock drive. The spindle can be operated for live or dead center work, and the front bearing is adjustable. The base is graduated to swivel 90 degrees.

Five traverse speeds are also available for the table through a sliding-key gearbox. The swivel table swings on a central stud. Automatic crossfeeds of the table are available for a range of 0.00025 to 0.0025 in. at each reversal of the table. Wet grinding may be done.

— 39 —

Grinders, Roll, Hydraulic, Type B

Landis Tool Co., Waynesboro, Pa. [Vol.72,p.199]

Fitted to grind rolls either straight, concave, or convex, the Type B hydraulic roll grinder is made in various swings such as 16, 20, 24 and 28-in., and in lengths between 8 ft. and 16 ft., in increments of 2 ft. Among the chief features of the machine are: hydraulic work carriage traversal and reversal; drive to the grinding wheel spindle through multiple V-belts; economical grinding by means of a 30-in. grinding wheel, and an accurate crowning and concaving mechanism.

Machines of this type are not supplied with a swivel table unless by special arrangement, the footstock being provided with a cross-adjustment for maintaining alignment. This footstock is adjustable along the entire length of the bed.

Total inclosure and full protection from grit and water are features of the dual eccentric type crowning and concaving mechanism. Each pair of change gears may be used for a wide range of workspeeds. The number of pairs required is dependent upon the variations in the length of the rolls being ground and the amount of crown or concavity. The mechanism is driven from the carriage drive mechanism, the final drive to the two eccentrics being through worms and worm gears.

Roll carrying heads are generally of the three-bearing type, with separable and easily adjusted bearing blocks. The main drive motor is mounted on the rear of the bed.

— 40 —

Grinder, Roll, 28-Inch, Type "D"

Norton Co., Worcester, Mass. [Vol.72,p.818]

A line of roll-grinding machines and grinding wheels for highly finished rolls used in cold rolling have been developed. One of the machines is the 28-in. Type "D" machine which is built in lengths from 96 in. up. The design of this machine is not a radical departure from previous models, but does incorporate many features and improvements. The proportions of the base and tables and the wheelslide are such as to insure rigidity, and the alignment of the parts is such as to permit the attainment of high-grade finishes on large rolls. Among other features are flood lubrication of the table ways and the spindle bearings, and multiple V-belts for driving the spindle without vibration.

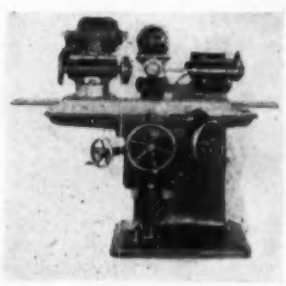
It is claimed that with this machine a quality finish may be produced with fewer wheel changes than has ordinarily been the case. The selection of wheels depends to a great extent on the size of the roll and the degree of hardness.

— 41 —

Grinder, Face and Internal

Jarecki Machine & Tool Co., Hall St. & Steel Ave., S.W., Grand Rapids, Mich. [Vol.72, p.235]

Three grinding spindles are provided on the internal and face grinder. These are a heavy-duty internal grinding spindle, a high-speed internal grinding spindle, and a heavy-duty face grinding spindle. Individual motor drives are furnished for the internal grinding attachment, the face grinding attachment, and the head in order



to control the different speeds. Hand feed is furnished.

Specifications for internal grinding are as follows: minimum ¾ in. in diameter by 4 in. in length; maximum 10 in. in diameter by 10 in. in length. Face grinding can be done to 12 in. in diameter. The self-aligning, ball-bearing, heavy-duty internal grinding spindle has four quills ranging from 2½ to 10 in. in length. Speeds range from 2,600 to 5,200 r.p.m. The high-speed internal grinding spindle has three quills ranging from 2 to 6 in. in length, and the speeds range from 10,000 to 15,000 r.p.m. Three quills are also provided on the heavy-duty face grinding spindle, ranging from 2 to 8 in. in length. The speed is 5,600 r.p.m. The heavy-duty chuck spindle has speeds ranging from 80 to 240 r.p.m., and is equipped with a 7½-in., independent, four-jaw chuck.

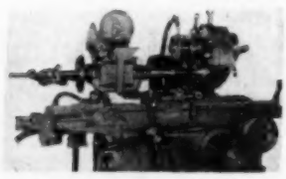
Other specifications are as follows: vertical movement of bed, 12 in.; longitudinal movement of bed, 24 in.; traverse movement of bed, 10 in.; height of spindle centers, 47 in.; floor space, 48 x 66 in., and weight complete, 2,400 lb.

— 42 —

Grinder, Internal and External, Turret-Type, No. 104-5

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.72,p.71]

To grind a part which must be absolutely concentric at one chucking, this turret-type grinding machine having one external



and one internal spindle has been placed on the market. The two-station turret is mounted on the cross-slide of the machine. The turret is indexed conveniently by a spring-loaded indexing pin with pull-out handle at the front of the housing.

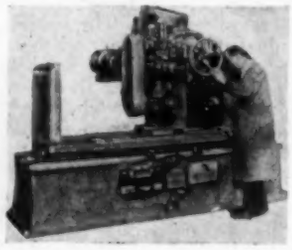
The grinder is motor driven, carrying the motor on the work-head, and the main motor drive is located on the back for the power table reciprocation, the water pump, and the grinding spindle drive. Reciprocation of the table is accomplished through the Rivett heart cam movement. The machine is furnished with both an automatic headstock stop and start control and an automatic water control. The power table reciprocation is engaged by movement of the ball handle at the right-hand end of the table, and feeding of the grinding wheel is controlled by the graduated cross-slide hand-wheel.

— 43 —

Grinder, Surface, Universal-Head, Type H

Diamond Machine Co., Providence, R. I. [Vol.72,p.32]

By the inclusion of a universal head in the design of the Type H surface grinder, grinding of surfaces at all angles can be done with simple set-ups. The universal head is an integral feature of the machine, and the angle is changed by



loosening two clamp screws and turning the wheel to the angle desired. The wheel can be set accurately to a protractor placed on the table or, if desired, a protractor can be attached as extra equipment. Wheel guards for disk, cup, and dish abrasive wheels are furnished. Hydraulic table drive through cylinders and pistons gives a wide range of speeds.

The machine is also built with capacity for larger work. The standard size handles work 16 in. wide by either 48 or 72 in. long and 12 or 16 in. high, depending upon the wheel used.

On the particular machines mentioned there are four cross feeds. Rapid traverse is at 17.75 in. per minute. Vertical feeds are 0.0125, 0.025, 0.050 and 0.100 in. per stroke, with rapid traverse at 8.80 in. per minute. Hand feed is provided for both the cross and the vertical feeds. The total table travel is 60 in. or 84 in. The wheels used are 12 in. in diameter by 1½-in. face by 1½-in. hole and run at 1,500 rev. per minute.

Floor space, 154 or 202 in. in length by 83 in. in width; height from floor to table, 30 in.; weights, 8,500 lb. for the 48-in. machine, and 9,500 lb. for the 72-in. machine.

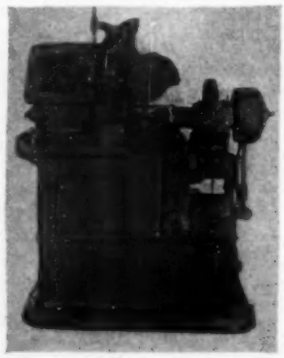
— 44 —

Grinder, Spur and Helical Gear, "National-Cleveland"

National Tool Co., Madison Ave. at 112th St. Cleveland, Ohio. [Vol.72,p.433]

Both spur and helical gears can be ground on the 4- and 8-in. gear-tooth grinders. These machines are particularly suited to the production of automobile transmission gears. The 4-in. size will grind up to 6-in. pitch diameter, 2 D.P., and finer. The 8-in. unit will grind gears up to 12-in. pitch diameter, 1 D.P., and finer.

These machines are automatic in operation. Indexing from



tooth to tooth takes place at the end of return strokes. They are furnished to grind gears to any given pressure angle from 0 to 30 deg., by simply adjusting the swivel which carries the slide. Spiral gears of any helical angle, right or left hand, may be ground to a maximum spiral of 45 degrees.

Through the tumbler feed box, four speeds of operation are available, namely, 32, 50, 70, and 100 strokes per minute. Centralized control is provided.

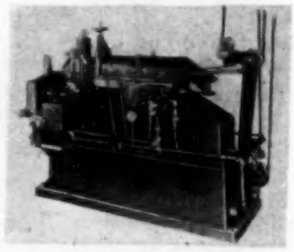
— 45 —

Grinder, Gear, Hydraulic, 9-Inch

Pratt & Whitney Co., Hartford, Conn. [Vol.72,p.1006]

All patents and manufacturing rights for the Garrison gear grinder were purchased from the Garrison Gear Grinder Company, Dayton, Ohio, by the above concern. Henceforth, this machine will be known as the "Pratt & Whitney 9-in. hydraulic gear grinder."

This gear grinder is claimed to provide a fast and accurate method of finishing gear teeth to close limits by generation and is economical for standard manufacturing. A reciprocating horizontal ram carries the grinding wheel back and forth through the teeth, grinding adjacent sides of two teeth at once. The gears being ground are rolled past the wheel under the guidance of a master gear and rack. As many passes per



tooth as necessary are given. When the work has been indexed one complete revolution, the machine stops automatically. Wheel dressing is accomplished by a built-in diamond device. Hydraulic operation of the ram and feed are provided.

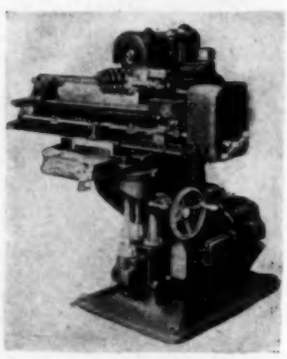
— 46 —

Grinder, Hob and Tool, Automatic, Indexing, "Reinecker"

George Scherr Co., Inc., 142 Liberty St., New York, N. Y. [Vol.72,p.857]

Automatic operation is the principal advantage of the Reinecker hob and tool grinder introduced into the United States by the above concern. This machine is made by Reinecker, at Chemnitz, Germany. Table travel is automatically reciprocated, with backlash compensated for, and work is automatically indexed from flute to flute or tooth to tooth.

In the standard form, the grinder is supplied for motor drive, but it can be had with a single pulley. The motor is mounted on an extension of the base, and is direct-connected to the main driving shaft. Two speeds are provided for both the



grinding wheel spindle and the automatic table travel.

All adjustments of the indexing mechanism for the number of teeth and for the spiral lead are obtained with change gears.

The automatic dividing head casting is made of aluminum alloy. For taper grinding, the table top turns and is set according to the scale provided. The cross-slide also turns up to 45 deg., and a circular scale is provided for setting its position. Vertical and horizontal adjustments are made by means of a crank.

The wheelhead can be turned completely around. This is of importance in the grinding of multiple-thread hobs with a steep lead. Correct shape of the grinding wheel is maintained by a diamond dressing device. When specially ordered, the machine can be equipped with either cylindrical or internal grinding attachments, or both.

The Reinecker hob and tool grinder is built in two sizes. The No. 1 will take 8 in. in diameter and swing 28 in., whereas the No. 2 will take 16 in. and swing 31.5 inches.

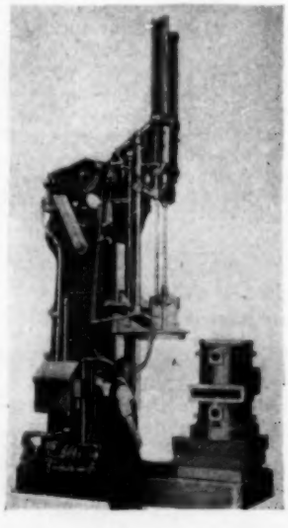
— 47 —

Honing Machine, Vertical, Hydraulic, Heavy-Duty, No. 3620

Barnes Drill Co., 814-830 Chestnut St., Rockford, Ill. [Vol.72,p.235]

Large and comparatively long cylinders, such as those for Diesel engines and air compressors, may be honed on this machine, which is equipped with a hydraulically reciprocated spindle. The unit has capacity for castings 36 in. in outside diameter and will hone cylinders up to 20 in. in diameter by 54 in. long.

Duplex hydraulic cylinders are used for reciprocating the ten-splined spindle. Duplex torque bars and a bracket minimize vibration. The spindle and hone assembly are balanced pneumatically. Eight quick-change speeds are furnished to the spindle, which rotates in Timken bearings.



Large diameter cylinders, if reamed to within 0.005 to 0.008 in. of size, may be honed to within 0.001 in. The long honing stones pass over the port holes and recesses in the cylinders, leaving a true edge about these openings. Stones range from 4 to 12 in. in length to suit the work done.

Although the standard stroke is 56 in., longer or shorter strokes may be furnished. Height of regular machine to extreme top, with the spindle up, is 18 ft. 8 in. The distance from the center of the spindle to the face of the column is 18. in. With special columns this distance may be increased. Maximum distance from top of table to nose of spindle is 10 ft. 6 in. Working surface of the air-operated work table is 30 by 30 in., and the horizontal travel of table on ball bearings is 30 in. With 2 to 1 crown gearing, the primary spindle speeds are 354, 250, 180, and 128 r.p.m. When back geared, the additional four speeds are: 89, 63, 45, and 32 r.p.m. An Oilgear motor supplies power.

Floor space, 58 by 17 in.; weight, approximately 12,000 pounds.

— 48 —

Honing Machine, Medium-Heavy-Duty, No. 2420

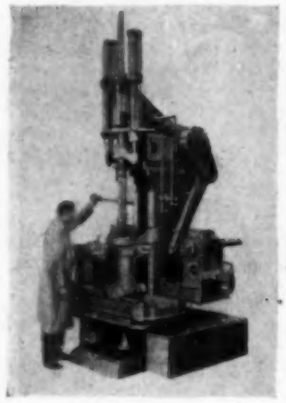
Barnes Drill Co., 814-830 Chestnut St., Rockford, Ill. [Vol.72,p.503]

For producing smoother finish and greater accuracy of Diesel engine cylinders and liners, locomotive cylinders, and other cylinders, a smaller size vertical honing machine, known as the No. 2420 medium-heavy-duty type, has been developed. This machine will take cylinders up to 20 in. in outside diameter and not over 30 in. in length. It has many features that are also standard on the No. 3620 model described on page 235, Vol. 72 of the *American Machinist*.

Among the features that are common to both machines are: the use of a rotating and reciprocating ten-splined spindle, hydraulically controlled as to length and rapidity of stroke. The length of stroke may be set for just the right amount of over-run.

The parallel hydraulic cylinders on opposite sides of the spindle housing minimize height, and permit various lengths of spindle stroke. A yoke connection to the spindle permits of attaching multiple heads when desired.

Four quick-change spindle speeds are furnished. Radial ball bearings and Timken roller bearings are applied throughout. Control is effected through a



combined control lever, which is used for the powerful multiple-disk driving clutch.

Specifications are: height of regular machine, 12 ft.; distance center of spindle to face of column, 12¼ in.; maximum distance from base to spindle nose, 77¾ in.; maximum distance from top of table to nose of spindle, 64 in.; minimum distance, 9 in.; spindle stroke, 1 to 32 in.; size of regular table, 18x28 in.; vertical travel of plain table, 23 in.; rate of reciprocations, 20 to 50 per min.; floor space with filtering tanks, width and front to back, 56x64 in., and net weight, 6,000 pounds.

— 49 —

Grinder, Special, Double-Spindle, No. 56

Charles H. Besly & Co., Chicago, Ill. [Vol.72,p.1042]

To produce flat surfaces on large heavy objects such as cast-iron heating boiler sections, this No. 56 double-spindle grinder has been developed. It employs two grinding wheels 6 ft. in diameter mounted face to face so that both sides of a section are ground at the same time. The grinder is equipped

with a large traveling table fixture mounted on ball bearings and operated hydraulically.

The fixture is started from the loading position at high speed and traversed at gradually slowing speed to the grinding position. It is reversed automatically. Grinding wheels are fed against the section by means of weights and sized by a positive micrometer arrangement. When the section has been ground to size, the operator pulls a lever, and the fixture with the section returns to loading position and stops. Grinding wheels are drawn apart to permit the sections to enter, this operation also being done hydraulically.

These sections are finished flat and to size within 0.003 in., the sides of the large sections measuring 56x65 in. The operation is performed complete in 4 min.

The hydraulic systems operating the fixture and the clamping devices are driven by 7½- and 3-hp. motors. Lubrication is effected by means of an automatic system. The two 6-ft. "Titan" wheels are driven by two 50-hp. motors.

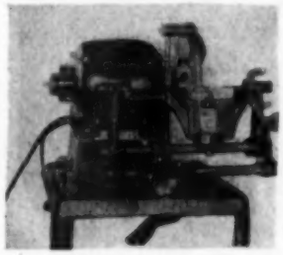
Weight, 35 tons; floor space, 30 by 40 ft.; height, 10 ft.

— 50 —

Grinder, Cutter

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.548]

Any round edge cutter from ⅛ to ¾ in. thick and from 2 to 4 in. in diameter can be sharpened on this machine. The cutter is merely swung in front of



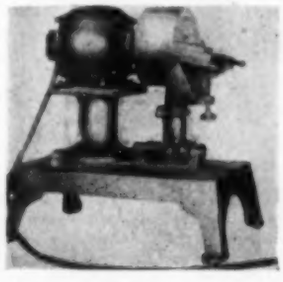
the wheel. The index rests upon the tooth being sharpened. Any arc of a circle can be obtained. The grinder is furnished for 110 or 220 volts a.c. or d.c. A diamond wheel dresser goes with the machine.

— 51 —

Grinders, Cutter-Blade

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.744]

The sharpening of reamer blades, inserted milling cutter blades, die chasers, and box tool blades may be done on this electrically driven tool sharpening machine. The cup wheel is mounted directly on the motor spindle. It will grind blades or chasers of any ordinary width or thickness and up to 4 in. long. The work is laid on a flat plate against an adjustable stop and held by a simple clamp. This work-holding plate can be swiveled for any desired taper,



and can be adjusted to grind any bevel on the cutting edge.

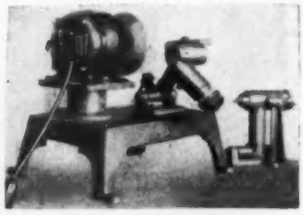
The work-holding plate swings past the wheel on pivots, protected from dust and adjustable for wear. A ⅛-hp. motor operating on 110 or 220 volts is furnished.

— 52 —

Grinder, Cutter

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.822]

Any regular die-sinking cutter, either of the tapered or ball-cutter type, may be sharpened on this machine. It is powered by a ⅛-hp. motor op-



erating on 110- or 220-volt circuits.

Two workheads are furnished. One head is for grinding cutters that are straight or with any needed taper. The cutter is held in a draw chuck and the spindle is revolved by the knob shown. A cam on the spindle causes the work to advance to the wheel and produces a radial relief.

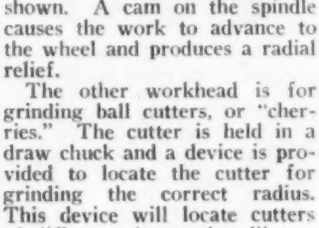
The other workhead is for grinding ball cutters, or "cherries." The cutter is held in a draw chuck and a device is provided to locate the cutter for grinding the correct radius. This device will locate cutters of different sizes and radii.

— 53 —

Grinder, Cutter, No. 30

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.1010]

Straight- and spiral-flute milling cutters, side mills, milling cutters, counterbores, and circular form tools can be sharpened correctly on the No. 30 cutter sharpener. A saucer wheel is furnished to sharpen formed cutters and form tools,



but for all other types of cutters a cup wheel is employed for grinding a flat relief. The swivel head of the machine can be adjusted to suit any cutter.

Wheels are mounted directly on the motor shaft and can be readily changed or replaced. The ⅛-hp. motor is furnished with a switch and cord.

Weight, 75 lb.; bench space, 14x17 in.

— 54 —

Grinder, Die and Tool, "Jewel"

Highland Park Tool Co., 3801 Trenton Ave., Detroit, Mich. [Vol.72,p.510]

The "Jewel" grinder substitutes a fast precision machine operation for the tedious and time-consuming bench operations of filing and stoning. It is claimed that any radius, contour, or sweep, either internal or external, can be ground on this machine. Ordinarily the dies are machined to within $\frac{1}{64}$ or $\frac{1}{32}$ in. of size and hard-

ened, after which the grinder is employed to remove the excess material. In this way distortion and decarbonization on the cutting edges are taken care of.

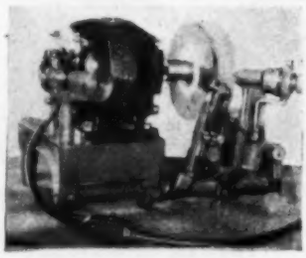
Adjustments are made easily. The Jewel grinder operates on either 110 or 220 volts, a.c. or d.c., and uses standard grinding wheels and equipment. It comes supplied with one diamond dresser and four grinding wheels with diameters of ½, 1, 2, and 4-in., the widths all being 2 in. Two arbors for holding standard cup wheels are also supplied.

— 55 —

Grinder, Drill

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.541]

A drill grinder powered by a ⅛-hp. motor has been placed on the market. Drills up to ¼ in. can be sharpened. A draw-in chuck held in a quill and provided with a draw-in rod is used to hold the drill for the grinding operation. Before grinding the drill, it is put into the lining-up holder shown at the left of the machine and fixed in the correct position. After this operation the drill and the quill



are inserted in the grinding fixture at the right. A cam and swing motion causes the drill to be moved across the face of the grinding wheel. The point is also thinned on an emery wheel held in a fixture. A diamond wheel dresser is supplied.

— 56 —

Grinder, Scraper

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.859]

Scrapers employed for use on metal patterns may be sharpened on this machine. In addition, it will grind all kinds of woodworkers' chisels, plane irons, and wood scrapers to the correct angles. It will grind flat scrapers for machinists to the correct shape with a free cutting wheel, which will not heat nor draw the temper of the tool.

The supporting plate will hold any chisel or scraper up to 3⅜ in. wide, and can be adjusted

for any angle of cutting edge. The cup wheel is mounted directly on the motor, which is of ½ hp., operating on 110 or 220 volts.

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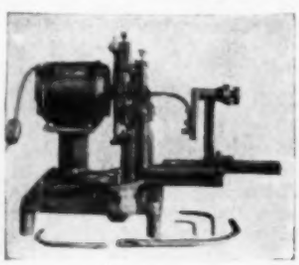
Grinder, Tap, No. 14

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.1011]

Because of their awkward shape, it is almost impossible to grind bent shank tapper taps



free-hand so that they will cut efficiently. But by the use of a No. 14 bent tap sharpener, it is claimed that as good results can be obtained with bent taps as with straight taps. This grinder will grind a tap with the correct eccentric relief. The tap is gripped in the machine and guided by the relief cam. Its capacity is up to and including ¾-in. bent-shank tapper taps.

Weight, 72 lb.; bench room required, 14 x 22 inches.

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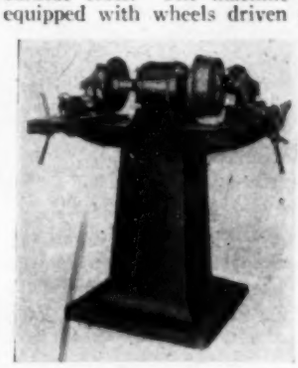
Grinding and Lapping Machine, Tungsten-Carbide, No. 2-H-1½

Advance Diamond Tool Co., 427 West Congress St., Detroit, Mich. [Vol.72,p.502]

Additional features and refinements have been added to the bench-type combination grinder and lapper for tungsten-carbide tools. The machine is equipped with wheels driven at



the proper speed for roughing, finishing, and lapping, and employs two special universal vises.

Both ends of this machine are provided with slides parallel to the faces of the wheels, and upon each slide there is placed a cross-slide for moving the universal vise in and out. The tool remains set up to the proper angle throughout the entire grinding and lapping operations. Either direct or Texrope drive can be furnished.

Standard equipment includes: a cast-iron disk mounted with a 12-in. roughing wheel; another cast-iron disk mounted with an 8-in. finishing wheel; two special universal vises, and one diamond lapping disk.

Floor space, 30x50 in.; weight, 1,300 pounds.

— 59 —

Grinder for Tungsten-Carbide Tools

J. G. Blount Co., Everett, Mass. [Vol.72,p.934]

This motor-driven, wet, cup-wheel grinder is fitted with a 14x4-in. cup wheel having a 1½-in. wall, making it possible to grind straight side angles on tools. An adjustable table is provided to give angles in two

different planes with respect to the wheel, while the third angle is obtained by a sliding protractor guide, against which the tool is held. Free hand grinding is employed.

Cooling of the bit is gained through a large volume of water under high velocity. The secondary nozzle at the top of the guard provides an additional stream.

Drive is obtained from the 2-hp. motor belted to the spindle. Both the column and pan are of heavy construction. A large reservoir for water is found in the column.

Weight, approximately 1,100 pounds.

— 60 —

Lapping Machines, Tungsten-Carbide, Types H-2 and V-1

Modern Diamond Tool Co., 1050 Mt. Elliot Ave., Detroit, Mich. [Vol.72,p.967]

The Type H-2 has the composite wheel placed in the vertical plane, whereas that of the Type V-1 lies in the horizontal plane. The composite lapping wheel is claimed to cut considerably faster than the plain iron wheel. It is made up with the countersunk copper rivets placed in the surface and charged with diamond powder. The edge produced is sharp and is claimed to last from 20 per cent to five times longer than a plain ground tool.

The Type H-2 lapping machine requires a ½-hp., a.c. or d.c. motor. The angle gage is 45 deg. right or left, and a cross-table slide is provided. The table tilts down 20 deg., and 10 deg. up, and the distance from the surface to the floor is approximately 38 in. The overall dimensions are 24x26x44 in. and the weight 315 pounds.

The Type V-1 machine has a table 36x24 in., 38 in. from the floor. The diamond lapping wheel is 11 in. in diameter.

— 61 —

Grinder for Tungsten-Carbide Tools

Standard Electrical Tool Co., Cincinnati, Ohio. [Vol.72,p.1007]

Reconditioning tungsten-carbide toolbits is the function of this direct motor-driven grinder. The holder holds the tool rigid with set-screws in a radial member, which has forward micrometer adjustment by means of a screw and ball crank. The radial member is graduated at the base. Rake is adjusted by means of a 90-deg. graduated slot in the base of the attachment. Vertical movement is ob-

tained by sliding the entire attachment in the long slot in the vertical member, and horizontal adjustment is made by sliding the knuckle joint on the bar to compensate for wear of the wheel. The toolholder is moved by hand across the face of the wheel.

The angle, rake, and cut can be set before grinding. The machine is powered by a 3-hp. motor. It can be arranged for installing a coarse wheel for rough grinding on one side and a fine wheel for finishing on the other side.

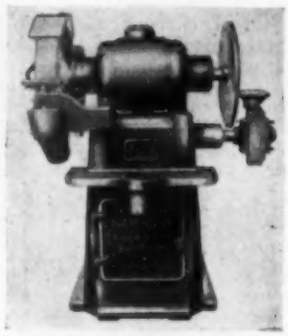
The wheels employed are 14 x 4 x 1½ in. face, cup type. Height from floor to center of spindle, 37 in.; weight, approximately 800 pounds.

— 62 —

Grinder, Disk and Production

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol.72,p.36]

Four sizes of the combination disk and production grinder are 2, 3, 5, and 7½ hp., for 220- and 440-volt, 25- to 60-cycle, a.c. circuits, and 110- and 220-volt d.c. circuits. They are suitable for disk grinding operations where the number of such operations is limited. The solid grinding wheel can be used for tool or casting grinding. Standard equipment includes a steel adjustable wheel guard, a steel disk, and a plain table. A universal lever feed table can be



furnished. These machines can also be fitted with disks on both ends.

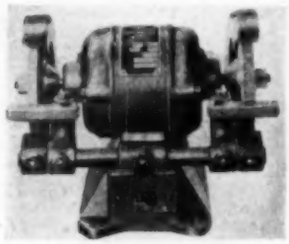
Grinding disks are machined on both sides, so that two disk wheels can be mounted at one time. After one is worn, the wheel can be reversed.

— 63 —

Grinder, Bench-Type, "Red Streak"

Wappat Incorporated, 7524 Meade St., Pittsburgh, Pa. [Vol.72,p.75]

This portable electric bench grinder is designed for general grinding purposes and tool sharpening. Two 6-in. grind-



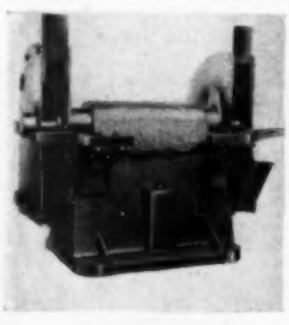
ing wheels are covered with adjustable safety guards. The grinder is balanced. The switch is located at the base. A rubber-covered cable with attachment plug and two adjustable toolrests are supplied. The motor operates on 110- or 220-volt, a.c. or d.c. circuits.

— 64 —

Grinder, Floor-Stand, Heavy-Duty, No. 124 HS

Ransom Manufacturing Co., Oshkosh, Wis. [Vol.72,p.239]

Designed to use large wheels in order to effect grinding economy, the No. 124 HS heavy-duty grinder is equipped with



two 36 x 3-in. wheels running at 9,500 surface ft. per minute.

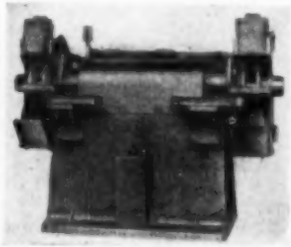
The motor is mounted in the base on a platform, which is adjustable up and down by means of a screw. Either a 15- or 20-hp. motor may be used, and it drives the main spindle by means of Texropes. The spindle is 4⅜ in. in diameter and runs in two large SKF ball bearings. Both toolrest brackets are adjustable up and down through an unusual amount. The machine weighs 5,300 lb. without the grinding wheels.

— 65 —

Grinder, Heavy-Duty, Type MRW

Ransom Manufacturing Co., Oshkosh, Wis. [Vol.72,p.280]

Two 24x4-in. wheels of 2½-in. bore are mounted on this Type MRW heavy-duty grinder. Texrope drive with an extra strand is provided, a 7½-hp., multi-speed motor furnishing the drive. The speeds are 900,



1,200, and 1,800 r.p.m. A three-button switch arranged with padlocks is provided for obtaining the proper wheel speed. Ayerage wheel speeds for the above individual motor speeds are 1,025 r.p.m. for 24-in. wheels, 1,367 r.p.m. for 18-in. wheels, and 2,050 r.p.m. for 12-in. wheels.

At slight additional charge, a controller device can be attached below the wheel, which operates a selective switch automatically, the switch giving the right speed for the diameter of the wheel employed.

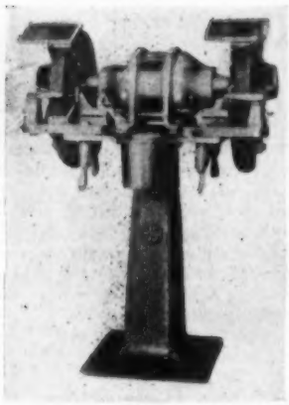
— 66 —

Grinder, Model 1930, "Autostart"

U. S. Electrical Manufacturing Co., Los Angeles, Calif. [Vol.72,p.319]

A line of polyphase and single-phase "Autostart" Model 1930 buffers and grinders has been placed on the market. The polyphase types are available in sizes from ¾ to 5 hp., and the single-phase sizes from ½ to 2½ hp. On the first type the wheels carred range from 10x1 in. to 16x3 in. and on the latter type, 7x⅝ to 14x2 inches.

Among the conveniences built into the grinder are: the glass chip shield; the flange keyed to the shaft and held by a rod when the outside nut is loosened or tightened; adjustment to give



the proper guard clearance; and a three-way, adjustable toolrest.

The buffers are essentially the same as the grinders, except that the spindle speeds are higher.

— 67 —

Grinders, Double-Disk

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol. 72,p.472]

Continuous production service may be obtained from these double-disk grinders. Sizes from 3 to 10 hp. are available, the disks being 12 to 24 in. in diameter. Each machine is provided with a totally inclosed, fan-cooled motor.

The two disks are machined on both sides and are reversible

so that two disk wheels can be mounted at the same time on each disk. Standard equipment includes one plain table and one lever-feed table as shown.

A push-button control is mounted in the front and a Cutler-Hammer automatic motor starter on the pedestal door.

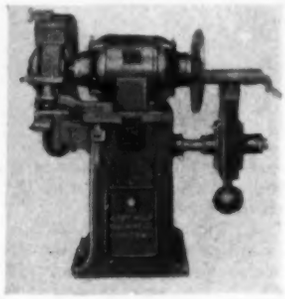
— 68 —

Grinder, Disk and Floor Stand

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.72,p.509]

By combining a disk grinder and a floor-stand grinder in one machine, a unit of greater than ordinary utility of particular value to small shops has been produced. The disk wheel is 20 in. in diameter and the grinding wheel 18 x 3 in. The spindle speed is 1,140 r.p.m., and 5 hp. is required.

The plain work table has a surface of 9¼x10¼ in., whereas the universal lever feed table has a surface of 8x14¼ in. Standard equipment includes one safety combination wheel guard, a 20-in. steel disk, an automatic safety motor starter, and either



a plain or a universal work table. The over-all dimensions are 29x54x51 in., and the weight 1,300 lb. The grinder is supplied for use on 220-volt, 3-phase circuits.

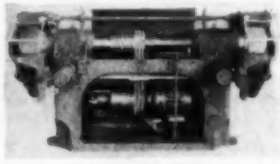
— 69 —

Grinder, Snagging, High-Speed, No. 50

Standard Electrical Tool Co., 1938 West Eighth St., Cincinnati, Ohio. [Vol.72,p.707]

This machine is a heavy, high-speed, floor-stand, production grinder, having a working range of 7,500 to 9,000 s.f.p.m. The work rests and boiler plate hoods with overlapping covers are removable to accommodate any working conditions. The safety control device works in conjunction with the movement of the hoods.

The spindle is 4 in. in diameter, 74 in. long, and is



mounted in four SKF ball bearings.

The grinding wheels employed are of the ring type, 24 to 30 in. in diameter, with 12-in. hole and 2- to 4-in. face, according to the horsepower of the motor. The machine is made in a 10-hp. model for 24-in. wheels, and 15-hp. for 30-in. wheels.

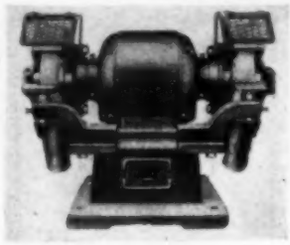
— 70 —

Grinder, General-Purpose, Type W

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol. 72,p.859]

The Type W electric grinder is suitable for general purpose work and for use as a light production grinder. It is made in 1½- and 2-hp. capacities, the motor being totally inclosed. Push-button control is conveniently mounted on the pedestal.

The chrome-nickel steel shaft floats on over-size ball bearings protected by means of double labyrinth seals. Standard equip-



ment also includes universal, adjustable, steel wheel guards. Exhaust outlets are furnished. Shatterless glass eye shields offer protection and convenience to the operator. The single-phase machine is supplied with a condensor-type motor.

These machines are furnished for 110-, 220-, 440-, and 550-volt, 1-, 2-, or 3-phase, a.c. circuits, and for 110- and 220-volt d.c. service. They are supplied in both the bench and floor types, the 1½-hp. machine taking grinding wheels 10 in. in diameter by 1½-in. face and the 2-hp. unit, 12x2-in. wheels.

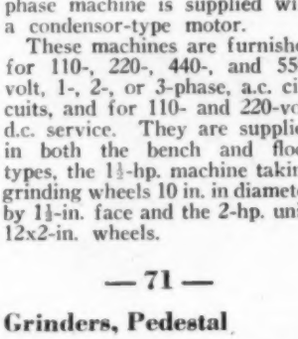
— 71 —

Grinders, Pedestal

Production Equipment Co., Cleveland, Ohio. [Vol.72,p.972]

A complete line of grinders and polishing lathes are being marketed under the trade name of "One Profit."

Bench or pedestal types in sizes ranging from 1 to 15 hp.



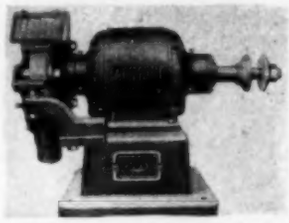
for normal-duty, heavy-duty, or super-service requirements can be supplied. The design embraces both motor-in-head and motor-in-base types.

— 72 —

Buffer and Grinder

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol. 72,p.973]

This machine will take a grinding wheel on one end and a buffing, polishing, or wire scratch wheel on the opposite end. It is furnished in ¼-, 1½- and 2-hp. sizes. The 1½-hp. and larger machines are equipped with push-button control and a



Cutler-Hammer automatic motor starter.

These machines are furnished for a.c. circuits of 110, 220, 440 and 550 volts, 25 to 60 cycles, one, two, or three phases, and in d.c. models for 110 and 200 volts.

— 73 —

Grinders, Pneumatic, Rotary, "Thor"

Independent Pneumatic Tool Co., 600 West Jackson Blvd., Chicago, Ill. [Vol.72,p.74]

This line of pneumatic grinders is based on the rotary principle. Features are light weight, governed speed, increased power,

and lack of vibration. Because of the rotary principle, the air consumption and upkeep cost are low.

No. 260G has a speed of 4,300 r.p.m. and carries an 8-inch elastic-bonded wheel or a 6-in.

vitrified wheel. Weight, 13½ lb. No. 00 has a speed of 28,000 r.p.m., and is particularly adapted for touching up dies. It carries a 1¼-in. elastic-bonded wheel and various pencils, sticks, or special shapes. Weight, 2¾ pounds.

— 74 —

Grinder, Portable, Pneumatic

Madison-Kipp Corporation, Madison, Wis. [Vol.72,p.277]

This tool is suitable for finishing irregularly curved surfaces in die cavities and also for touching up such surfaces after hardening. Other applications are: grinding end mills and reamers, and finishing form tools.

Although the grinding wheels used upon this tool rotate at 40,000 r.p.m., and the surface speed is 5,000 ft. per min., it is claimed that efficient operation

is obtained with only slight wear. Various forms of polishing wheels may also be employed.

The over all length of 8½ in. and the general shape of the tool permit it to be held conveniently, much like a pen or pencil. The weight of 12 ounces minimizes drag on the operator's hand and facilitates a sure, steady grip.

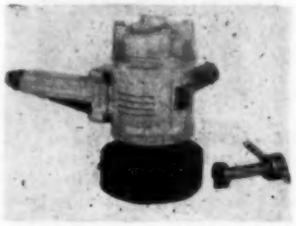
In the housing at the upper end there is located a turbine wheel carried on the spindle, to which compressed air is admitted through four equally spaced ports.

— 75 —

Grinder and Sander, No. 362-4, "Hercules"

The Buckeye Portable Tool Co., Dayton, Ohio. [Vol.72,p.352]

This tool is for use with felt pads and abrasive disks or cup wheels. It is equipped with the "Hercules" governor, which gives high load speed at small



air consumption. The air does not pass through the governor, but is delivered direct to the rotor.

The grinder is equipped with a safety throttle, and the dead air handle contains an oil reservoir. Both handles are placed close to the center of the tool to permit maximum grinding pressure with convenient handling.

— 76 —

Grinders, Portable, Pneumatic, Nos. 320-3 and 323-3, "Hercules"

The Buckeye Portable Tool Co., Dayton, Ohio. [Vol.72,p.784]

Pneumatic grinders in two models differing only in speed have been offered to the trade. They are intended for either vitrified or high-speed wheels, the former running at 6,000 r.p.m. and the latter at 9,000 r.p.m. The first uses either a 4-in. vitrified wheel or a 6-in.

high-speed wheel, and the latter a 4-in. high-speed or various small cone and pencil-type wheels.

The grinders are 18 in. in over all length and 3 in. in diameter. Their small size makes them effective even in close quarters.

— 77 —

Grinder, Portable, No. 113-3, "Hercules"

The Buckeye Portable Tool Co., Dayton, Ohio. [Vol.72,p.1049]

This grinder will use small emery wheels, emery pencils, and rotary files. It weighs only 3½ lb., and can be used in close quarters. The grinding spindle

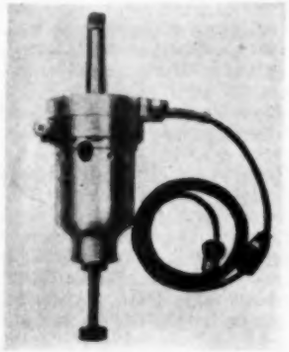
runs at a free speed of 22,000 r.p.m. The tool embodies a throttle and rear head in one piece, the throttle being a type operated by a touch of the thumb. With extension shaft spindle removed, the tool measures 12 in. long.

— 78 —

Grinding Attachment, Toolroom, Precision, "Olofson"

Palmer-Edwards Co., Sales Division, Flint, Mich. [Vol. 72,p.204]

The tool is manufactured by the Industrial Machine Tool Company, Fenton, Mich., for the above agent. By means of the taper shank support, the grinder can be used in any one of the standard machines, such as vertical or horizontal boring and milling machines and drill presses. The motor case itself turns at the speed of the machine spindle and should rotate at about 60 r.p.m. By means of a graduated dial adjusting screw, this dial, working in conjunction with an eccentric worm gear, effects an offset adjustment that results in an eccentric travel of the grinding wheel. Holes from ½ to 3 in. in diameter can be ground to close limits.



The tool is furnished with a No. 4 Morse tapered shank and a ¾x3-in. quill. Other size quills down to ½ in. can be furnished specially. The motor supplied is of the universal type, operating on 110- to 120-volt circuits at 10,000 r.p.m. and also on 220-volt circuits at the same speed. It is rated at ¼ hp.

Weight, 16 pounds.

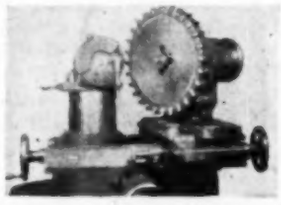
— 79 —

Grinding Attachment, Face-Mill

Cincinnati Milling Machine Co., Cincinnati, Ohio. [Vol.72, p.535]

For sharpening face mills from 8 to 18 in. in diameter, a face-mill grinding attachment has been developed for use with this company's No. 2 plain or universal cutter grinders. The attachment consists of three units; the spindle assembly, the swivel base, and the special arbor.

The work spindle has a No. 7



Morse taper hole and is mounted upon anti-friction bearings, both front and rear. A graduated swivel base permits the operator to swing the work through 360 deg. Provision has been made for locking the spindle. The distance between the center line of the attachment and the table is 9¼ inches.

Weight, 135 pounds.

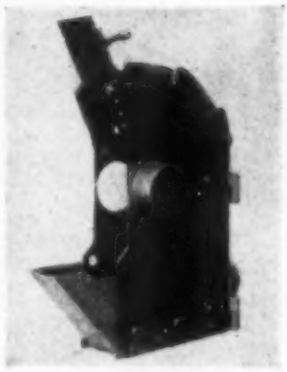
— 80 —

Guards, Snagging-Wheel, Style H

Ransom Manufacturing Co., Oshkosh, Wis. [Vol.72,p.711]

These guards are known as Style "H" and are made of rolled steel plate. At the top of the guard is a piece of plate steel ¼ in. thick, which is lowered as the wheels wear down in diameter. This part protects the operator if the wheel should break. All adjustments are accomplished with this piece.

The door is hinged and held shut by malleable iron latches, instead of nuts. A suitable cast-iron cover protects the end of the arbor and nut. The exhaust pipe opening is at the back of



the guard in such a position that the bond or dusty part of the refuse is carried off without clogging the apparatus.

The lower front part of the guard is made removable. It is left on when work is being ground, using a rest. But when no rest is used, this part may be removed and gives free access to the wheel.

These guards are made in the following sizes: 16, 18, 20, 21, 24, 27, and 36 inches.

— 81 —

Lap, Toolroom, Adjustable, Series 200 A

Brickner-Kropf Machine Co., Muskegon Heights, Mich. [Vol. 72,p.239]

Three die-cast medium hard alloy inserts are used in the Series 200A toolroom lap. The tool is so designed that it will lap to the bottom of a blind hole. No springs or delicate parts are employed.

The uniformity of the alloy inserts is held to close limits. These inserts are not recommended for use in holes of larger diameter than $\frac{1}{16}$ over the size marked on the back. The tool is made in sizes from

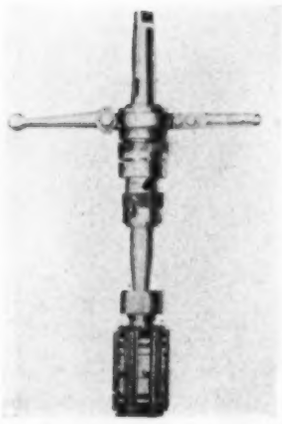
1 to $\frac{29}{16}$ in., inclusive. It is driven by a floating driver having a straight shank $\frac{7}{16}$ in. in diameter, although a special shank can be made to order. Positive adjustment of the wall pressure can be had while in motion and $\frac{1}{16}$ in. of adjustment is available. The lap should not be operated at excessive speed, not over 175 ft. per minute. Nine inserts are supplied with the tool.

— 82 —

Hone, Production, Model H P

Hall Manufacturing Co., Toledo, Ohio. [Vol.72,p.545]

For honing cast-iron, steel, bronze, aluminum and die-cast metals on a production basis, the Model HP production hones have been developed. These hones are available in sizes from



2 to 20 in. in diameter and in lengths from 4 to 12 inches.

The driving and expanding mechanism is connected to the hone by a ball joint in the hollow driving tube. This tube is made in standard lengths. A standard No. 4 Morse taper shank is fitted. The hone, driving tube, and expanding or connecting shaft can be quickly taken out of the upper mechanism by lifting the lower knurled collar and turning the driving tube to the left one-eighth of a turn, permitting it to drop free.

The expanding brake collar and the expanding handle, together with the rear roller extension, move up and down with the hone, but do not revolve. An upright guide must be fitted to the honing machine or drill press for the rollers to work in.

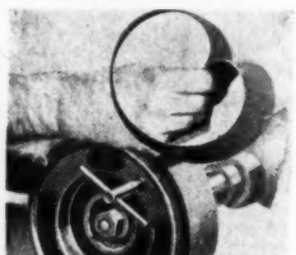
During honing, the operator presses down the expanding lever until it reaches the set limit stop. The tool will finish from 100 to 600 holes, according to the amount of metal removed and the hardness.

— 83 —

Wheel, Buffing, Rubber-Cushioned, "Quick-As-Wink"

C. B. Hunt & Sons, Salem, Ohio. [Vol.72,p.1008]

Rubber-cushioned abrasive wheels, made in 6-, 8-, and 12-in. diameters, are claimed to give clean smooth buffing action with a full width of face on either stationary or flexible shaft buffers. Abrasive cloth of any grade, from 24 to 180 grain, can be used, and the application of a new band is done easily without removing the wheel from the spindle. Strips of abrasive cloth may be attached with or without metal end clips.



Lathes

— 84 —

Lathe, Manufacturing, 18-Inch

Lodge & Shipley Machine Tool Co., Cincinnati, Ohio. [Vol. 72,p.33]

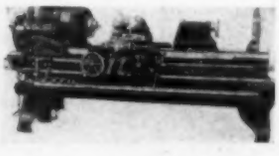
Equipped with a number of attachments that adapt it to production work, this 18-in. manufacturing lathe is of a type between the engine lathe and the automatic, and is equally effective on single-piece jobs and large or small lots. Ordinary lathe tools are used.

In addition to the regular equipment, the following attachments are furnished: pan, pump and tubing, multiple length and diameter stops, connected compound and plain rests, four-way tool block, and a high-duty tool block.

A multiple-length stop provides a direct method of duplicating lengths automatically. Five stop-dogs are furnished, adjustable along a stop-bar to trip the feed at any desired position.

Connected compound and plain rests, with a four-way tool block in the front rest and a high-duty tool block in the rear rest, provide five tools instantly. Each of the tools in the four-way block can be swung into the cutting position and returned repeatedly with not more than 0.001-in. variation.

The multiple-diameter stops, although not automatic in operation, are positive and accurate. They are located directly back of the cross-feed handle, making them readily accessible. Twelve stops are furnished, six for front and six for rear tools.



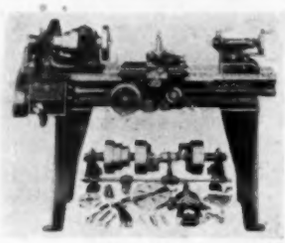
— 85 —

Lathe, Precision, 9-Inch

South Bend Lathe Works, South Bend, Indiana. [Vol.72, p.240]

Like the previous lighter models this sturdy 9-in. machine is a back-geared, screw-cutting precision tool. Its design, however, makes it a distinctly different machine. The principal improvement is a head-stock of the same style and design as was adopted on the large size toolroom lathe described on page 217, Vol. 71, of the *American Machinist*.

The improved headstock has a three-stop cone. By means of improved gear guards the headstock casting has been strengthened and braced in a manner similar to the 16-in. toolroom lathe.



Another change is the provision of a backgear-shaft oiling system. Easier and better oiling of the spindle bearings is also a feature, and the spindle carries a seal that prevents the accumulation of oil on the outside of the headstock.

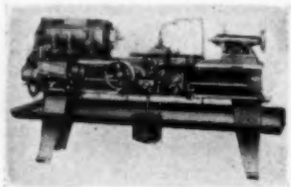
The lathe is available in several styles and sizes, and with countershaft or motor drive.

— 86 —

Lathes, Production, Sliding-Gear-Head, 14 and 16-Inch

Reed-Prentice Corporation, Worcester, Mass. [Vol.72,p. 388]

Adapted for plain turning, boring, and facing operations with high-speed steel or tungsten-carbide tools, a high-speed, sliding-gear-head lathe with a Timkenized spindle has been placed on the market. The speeds for use with high-speed steel range from 18 to 432 r.p.m., or with tungsten carbide from 52 to 1,250 r.p.m. The motor recommended is 5-hp., 1,200 r.p.m. Features are: cam lever tailstock, front and rear connected rests, multiple-type toolholder and drive by multiple V-belts or chain from a motor mounted in the base. The machine may be arranged and equipped with a power-feed bed turret.



The headstock incorporates a quiet, sturdy, and powerful sliding-gear transmission. Splash lubrication is provided. A one-piece box casing comprises the apron. One lever operates the double-disk clutch for either cross or longitudinal feeds and an inter-locking device prevents engagement of the feeds and threads at the same time.

Adjustable and detachable front and rear rests may be supplied.

The push-rod collet attachment has capacity up to 1 in. The oversize type can be supplied with capacity up to 1⅛ in. for round stock of short lengths, or the full capacity of the hole in the spindle, 1¼ in., for long shafts.

Specifications: 14-in. machine: swing over compound rest, 9 in.; swing taken between centers on 6 ft. bed, 31 in.; stead-rest capacity, 4¾ in.; toolpost takes ⅝x1-in. tool; feeds with quick-change gear mechanism, 41; floor space, 6 ft. bed, 7x3 ft.; weight, 2,450 lb. Specifications peculiar to the 16-in. lathe: swing over compound rest, 11 in.; tools taken, ⅝x1¼ in., and weight, 2,675 pounds.

— 87 —

Lathes, Engine, Metric

South Bend Lathe Works, South Bend, Ind. [Vol.72,p.433]

A complete line of metric system precision lathes, suitable for cutting a wide range of International and French Metric Standard threads from 0.5 to 8 mm. pitch, has been announced. These machines correspond in every way to the regular line of 1930 "New Model" backgeared screw-cutting engine lathes, being of the same construction and made in 9 in. (235-mm.) to 18 in. (470-mm.) sizes in a wide variety of styles.

These lathes are equipped with metric-thread precision leadscrews, a metric gearbox, and a metric-thread spindle nose. Cross-feed and compound-rest screws are furnished with micrometer collars graduated for regulating depth of cut by hundredths of a millimeter. These machines are intended for the manufacture of precision master taps, thread gages, dies, and fixtures.

— 88 —

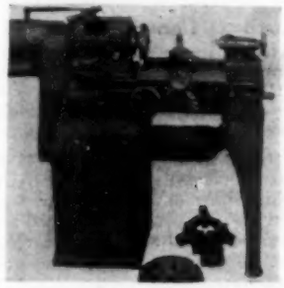
Lathe, Engine, Heavy-Duty, 11-Inch, "Gold Seal"

Sebastian Lathe Co., Cincinnati, Ohio. [Vol.72,p.541]

This machine is suitable for production work, and is built with accuracy for toolroom applications. Although it is desig-

nated as an 11-in. lathe, it actually has a capacity equal to a 14-in. lathe in that it takes collets up to ⅞ in., and has a 1 5/16-in. hole through the spindle.

The motor is built into the leg under the headstock, together with a cabinet for tools. The motor chain is surrounded by



cast-iron guards. When a standard 1-hp., 1,200 r.p.m. motor is used, eight speeds are obtained over a range of 26 to 620 r.p.m., but with a two-speed motor, this range is from 19½ to 930 rev. per minute.

The lathe is made in 3-, 4-, 5-, 6-, and 8-ft. bed lengths, and has a swing over the bed of 12 1/16 in., and a swing over the carriage of 8¾ in. The distance taken between centers on a 4-ft. lathe is 22½ inches.

The top slide of the compound rest travels 2 in. From 6 to 96 threads per in. can be cut, and the reverse for cutting left-hand threads is obtained by simply throwing a tumbler. The feeds and threads are obtained through the two levers in the quick-change box and one sliding on the quick-change tumbler shaft. The feeds range from 0.00175 to 0.111 in.

Weight, with 4-ft. bed, crated, 1,200 pounds.

— 89 —

Lathe, Engine, 16 to 24-Inch, "New Model"

South Bend Lathe Works, 426 East Madison St., South Bend, Ind. [Vol.72,p.672]

Designed for machining work of large diameter on which only light cuts are taken, the 16- to 24-in. "New Model" lathe is a regular 16-in. type fitted with raising blocks to increase the swing from 16¼ to 24¼ in. over the bed. The raising blocks are firmly fitted under the headstock, tailstock, and compound rest. The compound-rest raising block is graduated on the base so that the tool can be fed

to the work at any angle. It is fitted with automatic cross and longitudinal feeds and is especially built for the cutting of screw threads.

The lathe may be fitted with lathe chucks, drill chucks, and other attachments. It can also be supplied with countershaft drive or silent-chain motor drive, and can be had in any bed length from 6 to 12 feet.

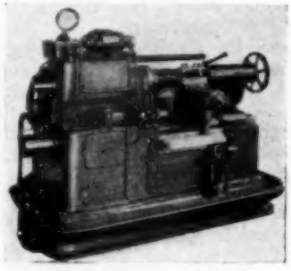
— 90 —

Lathe, Automatic, 16-Inch

John S. Barnes Corporation, Rockford, Ill., Division of W. F. & John Barnes Co. [Vol.72, p.743]

Hydraulic feed and control are the features of this machine, which also evidences simplicity of design and efficiency of operation. It is claimed that the lathe removes far more metal per horsepower than any other machine tool developed to date. The spindle rotates clockwise, as opposed to counter-clockwise rotation in all other lathes.

The unit consists of a spindle driven through a simple train



of gears, a universal front carriage that can be employed not only to feed the cutting tools into the required depth and turn straight, but also to turn tapers, and a rear tool slide. The rear tool slide can be slid along the bed and then set to feed in hydraulically. Hydraulic means are also provided for bringing the front tool slide into position and for moving it longitudinally toward the spindle head. On the same large machined surface to which the rear tool slide is fastened, the tailstock is also bolted.

A single motor located in the rear drives the spindle and the feed, rapid-traverse, and coolant pumps. Power to rapid-traverse both the front and rear slides is obtained from a pump driven by a chain connected to the motor. Power for feeding both the front and the rear slides is obtained from special pumps driven and controlled through the main spindle; that is, these pumps operate only when the main spindle is rotating.

Chain drives take power from the motor pinion to a jack-shaft carrying a disk clutch, through which pick-off gears are driven. The final drive to the spindle is through herring-bone gears. Spindle speeds varying from 30 to 375 r.p.m. can be obtained by interchanging the pick-off gears.

The front carriage is clamped upon and supported by a horizontal shaft, 4½ in. in diameter, which rotates and also moves longitudinally. Upon the carriage is an adjustable cross-slide. Longitudinal feed to the carriage is direct through the shaft to which it is clamped, the shaft being fastened to the piston rod of the hydraulic cylinder located at the headstock end, under the headstock proper. In and out feed of the front tool carriage is also direct. The whole carriage pivots about the horizontal shaft and adjustable roller under the carriage rests upon a hardened and ground guide bar, which is pivoted on one end, that nearest the headstock. A hydraulic piston controls the movement of this guide bar, which in its ordinary open position is tilted downward at an angle.

A single control lever at the front controls the rapid traverse. As soon as rapid traverse ceases, feed immediately takes place, the action being controlled by suitable stops on a control bar. Feeds for the front and rear slides can be set independently, dials being provided on each pump to adjust the feeds in thousandths per revolution of spindle. Variations from 0.001 to 0.10 in. per revolution are possible.

— 91 —

Lathes, Sliding-Gear-Head, 16- and 20-Inch

Reed-Prentice Corporation, Worcester, Mass. [Vol.72,p.750]

Especially adapted to make use of tungsten-carbide at speeds up to 1,250 r.p.m., a 16-in. heavy type and a 20-in. regular type have been added to the line of sliding-gear-head lathes. Most of the features are the same as the 14- and 16-in. regular types announced on page 388, Vol. 72, of the *American Machinist*. Among these features are: four-bearing Timken spindle mount-

ing; twin-disk clutch and brake; quick-change gear box offering 41 changes of feeds and threads; heat-treated, chrome-vanadium spindle; headstock gears of S.A.E. 3250 steel, and a one-piece box casting for the double-support-type apron.

A 15-hp. motor, running at 1,800 r.p.m. can be used, and is of the a.c. type. Drive from the motor to the headstock is by means of a silent chain. The motor is attached to a hinged bracket with a screw adjustment for the chain tension. Either flat or multiple V-belt drives can be furnished.

Specifications, 16-in. heavy lathe: Swing over bed, 17½ in.; swing over compound rest, 10¾ in.; swing over taper attachment, 9½ in.; swing over rear connected rests, 8 in.; distance taken between centers, 6-ft. bed, tailstock flush, 24 in.; steady-rest capacity, 6 in.; toolpost capacity, ⅝ in. x 1¼ in.; hole through spindle, 1½ in.; taper hole in spindle, No. 5 Morse; spindle speeds, 8, range, 12 to 405 r.p.m. in geometric progression; floor space, 6-ft. bed, 8 by 3½ ft.; weight, net, 3,750 pounds.

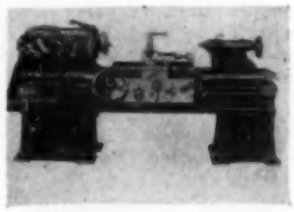
Specifications, 20-in. lathe: swing over bed, 21½ in.; swing over compound rest, 15¾ in.; swing over taper attachment, 13¾ in.; swing over rear connected rests, 12½ in.; distance taken between centers, 8-ft. bed, 48 in.; steadyrest capacity, 6 in.; toolpost capacity, ¾x1½ in.; hole through spindle, 1½ in.; floor space, 10 by 3½ ft.; weight, 4,100 pounds.

— 92 —

Lathe, Engine, Geared-Head, 20-Inch

The Flather Company, Nashua, N. H. [Vol.72,p.1039]

Large capacity per sq.ft. of floor space occupied is one of the features of this machine. Strength, rigidity and simplicity are combined with accuracy and ease of manipulation to make the unit suitable for the



use of both high-speed steel and tungsten-carbide cutting tools.

Initial drive may be by belt from overhead shafting or by an individual motor. The driving pulley may be mounted in either of two places, at the rear end of the headstock on a shaft connecting with the left-hand large bevel gear of the reversing unit or at the back of the headstock on a shaft connecting with the bevel pinion of the same unit. Two levers, one at the top of the headstock and the other at the right-hand side of the apron control the headstock spindle for the starting, stopping, and reversing motions. Twelve spindle speeds in geometrical progression from 12 to 350 r.p.m. are obtained by the use of but 13 gears. These are selective.

All driving gears and clutches, as well as the headstock spindles

and drive shafts are of alloy steel, heat treated. The splined shafts are of the multiple type. Lubrication of the entire headstock mechanism is by a dual system of splash and forced-feed.

A reversing mechanism for both the leadscrew and the feed rod is located entirely inside the headstock. Standard threads obtained range from 2 to 64 per inch and feeds from 0.005 to 0.170 in. per revolution of the spindle. Connection between the motor and driving pulley may be made by flat belt, V-belt, silent chain, or, in some cases, by gearing.

Specifications: Length of bed, 10 ft.; swing over bed, 21 in.; swing over carriage, 14¾ in.; distance between centers on 10 ft. bed, 72 in.; diameter of hole in spindle, 1 11/32 in.; length of carriage, 31 in.; width of tool block, 9 in.; centers, Morse No. 4; shipping weight, approximately 5,300 pounds.

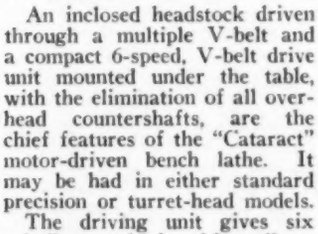
— 93 —

Lathe, Bench, Motor-Driven, "Cataract"

Hardinge Brothers, Inc., 4147 Ravenswood Ave., Chicago, Ill. [Vol.72,p.1045]

An inclosed headstock driven through a multiple V-belt and a compact 6-speed, V-belt drive unit mounted under the table, with the elimination of all overhead countershafts, are the chief features of the "Cataract" motor-driven bench lathe. It may be had in either standard precision or turret-head models.

The driving unit gives six spindle speeds in either direction, ranging from 200 to 2,000 r.p.m. Reverse is obtained through a train of three bevel



gears by means of a clutch. Drive from the motor itself is by a 3-step pulley and V-belt to a jackshaft carrying two V-belt pulleys driving to corresponding pulleys on the main drive shaft.

The headstock is completely inclosed. Standard "Cataract" bearing construction, a porous cast-iron sleeve lubricated through wicks and carrying a hardened steel spindle, is used. The tailstock has been modified and is much heavier than in previous models. It has a No. 1 Morse taper hole. Other parts are standard, such as the turret head and the compound slide rests.

The bench measures 72x30 in. On the back of the bench is a collet and chuck board.

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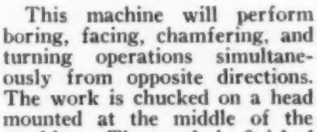
Lathe, Turret, Duplex, No. 2-F, "Fastermatic"

Foster Machine Co., Elkhart, Ind. [Vol.72,p.1004]

This machine will perform boring, facing, chamfering, and turning operations simultaneously from opposite directions. The work is chucked on a head mounted at the middle of the machine. The work is finished in a single setting.

Two standard turrets are mounted at either side of the special head. It is unnecessary to index the turrets back to the starting position after they have reached the third step.

The machine is run automatically, a series of cams pro-



viding for rapid advance of the tools to the work, changing to the required feed movement, withdrawing the tools, and indexing the turret to the next station. At the conclusion of the cycle, the machine is stopped automatically to a neutral position.

An electric motor is mounted on each end of the machine and a third motor at the back. The last provides means for driving the workhead.

All of the feed and rapid traverse movements of the turrets and tools are accomplished hydraulically through an Oilgear unit, and the rapid traverse movements by means of an oil pump. To operate the turret movements by hand, the control lever is thrown to the neutral position.

A safety device is placed in each turret, which makes it impossible for either tool to be fed into contact with the work, unless the turret has been indexed to the proper position and the turret locking bolt properly seated.

— 95 —

Lathe, Turret, for Tungsten Carbide, Special, "Duo-Control"

The Acme Machine Tool Co., Cincinnati, Ohio. [Vol.72,p.1007]

A special drive has been fitted to the "Duo-Control" turret lathe in order to make use of tungsten-carbide in machining phosphor-bronze bearings. A 25-hp. adjustable-speed motor is connected direct to the spindle by means of a flexible coupling. Spindle speeds from 300 to 1,200 r.p.m. are available. Starting, stopping, and braking are controlled electrically.

The spindle is fitted with the standard Acme roller-bearing construction. A positive lubri-

cating system is supplied for the spindle bearings.

Twelve independent reversible feed changes are provided for each carriage. Feed changes are made by means of sliding gears. The main carriage can be furnished with either fixed center or cross-sliding turret, either of the hexagon or flat type as required. Power rapid traverse is also incorporated.

The square turret carriage is rigidly mounted on both front and rear V's of the bed. Regular engine-lathe taper and chasing attachments can be furnished.

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Lathe, Turret, Duplex, Special, No. 2-F, "Fastermatic"

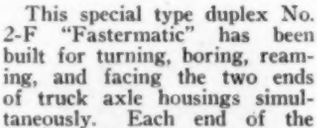
Foster Machine Co., Elkhart, Ind. [Vol.72,p.1044]

This special type duplex No. 2-F "Fastermatic" has been built for turning, boring, reaming, and facing the two ends of truck axle housings simultaneously. Each end of the housing is tapped, but since the thread in each end is right handed, it is necessary to reverse the rotation of the housing for producing the right-hand thread in the left-hand end.

The machine consists of a main bed planed to receive two sub-beds free to slide longitudinally. Each sub-bed carried a driving head and a hexagon turret complete with an automatic operating mechanism. Also, each sub-bed embodies a hydraulic ram for moving the sub-beds longitudinally apart or together. A special pump is provided for effecting the ram action.

The two workheads are driven from a single motor mounted on the rear, power being transmitted through a gear train and splined shafts; the latter supplying two speeds forward and reverse. Each head is provided with a clamping arrangement for chucking an end of the housing.

Midway between the two



heads is a swinging fixture for centering the axle housing endwise. This operates similar to a scroll chuck and is provided with two jaws to grip internally. Centers carried forward by the hexagon turrets locate the axle end concentric. Tooling on both turrets functions at the same time with the exception of tapping. A separate Oilgear pump is provided for feeding each of the turrets. In addition each turret may be positioned in order to be revolved freely by hand.

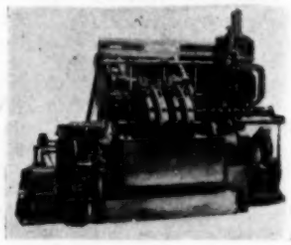
— 97 —

Lathes, Crankshaft, Automatic, No. 5 ACL

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.72, p.469]

Double-end and center drives are employed in the No. 5 ACL crankshaft lathes. These machines will turn the stub and flange and all main line bearings of eight-throw, nine-bearing crankshafts.

On the double-end drive machine the crankshaft is driven from both ends by heavy air-operated pot chucks. The



equalizing feature of the chucks is designed so that it is impossible to spring the crank when chucking it. The double-end drive machine turns the Nos. 3, 4, 6 and 7 line bearings of the crankshafts.

In the center-drive machine the crankshaft is held on the webs by two special equalizing clamps. It is located from the previously turned intermediate line bearings. Drive is through ring gears, which mesh with pinions mounted on a large splined shaft. The large driveshaft rolls on Timken bearings, and is driven by a large gear which meshes directly with the motor pinion.

Tools are actuated in an identical manner. A hydraulic cylinder is located in a compartment in the center of the machine, and through a rack and segment, motion is transferred to a large shaft which in turn actuates the tool bars by means of a toggle arrangement. The front and rear tools feed toward each other. At a given piston speed, the feed of the tools decreases automatically as they approach the end of the cut.

The use of tools of the vertical-bit type makes possible the removal and replacement of tools without changing the diameter setting of the machine. The front tool rough-faces the webs and finish turns the bearing, while the rear tools do the cheeking and finish face the webs.

The normal production generally averages between 10 and 25 crankshafts per hour.

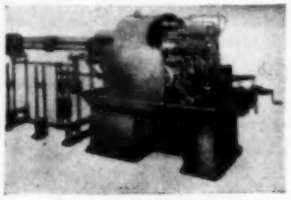
— 98 —

Screw Machine, Automatic, Five-Spindle, Improved, Model B

Davenport Machine Tool Co., 167 Ames St., Rochester, N. Y. [Vol.72,p.705]

Complete redesign of the Model B five-spindle automatic screw machine has increased the machine's productiveness, made it more universal in application, and provided greater durability. The illustrations show a model specially equipped with a box base and an elaborate system of guards.

Features include: (1) stock feed length changed by a crank, (2) non-cutting time of tools reduced to ½ sec., (3) adjustments for cross-slides and tool



arms at the front, (4) high-speed threading clutch efficient on either brass or steel, (5) clutch provided between turret tool cams and cross-slides, (6) only one gear need be changed when changing from one speed to another, (7) extra sleeves carry all cross-slide and turret cams for the next job, (8) rapid loading attachment operated from regular working position, (9) chute delivers finished work, (10) compensating stop screw on cross-slides, and (11) all levers for feeding and operating situated at the front.

Special equipment can be provided for threading in any convenient position. Four revolving drilling spindles can be used while operating the threading equipment. Special attachments for slotting, burring, and drilling, and a fifth cross-slide, a self-opening die, and a chip conveyor can be furnished. Each tool has separate feed and adjustment for length.

There are five turret tools and four cross-slide tools, each having its own independent movement. Tolerances as close as 0.001 in. or less can be maintained.

A camshaft clutch disconnects the tool spindle camshaft from the driving worm wheel so that the turret tools can remain in the back position, while the cross-slide tools operate as usual. This is a convenience when tooling up or feeding stock.

Four forming, cutting off, or other cross-slide tools can be used. Two regular cross-slides are securely attached to the bed on renewable seats, and two are placed on swinging arms.

The Model B five-spindle automatic screw machine has a regular capacity of the feed tubes of ½-in. rounds, $\frac{7}{16}$-in. hexagons, and ⅜-in. squares. The greatest length feed is 3 in. and the greatest length turned is 2½ in. Eleven spindle speed changes are provided, the range being from 600 to 2,400 r.p.m. Twenty-nine changes of feed gears are provided, the timing ranging from 1 to 20 seconds.

Floor space, 36 by 176 in.; net weight 3,200 pounds.

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Screw Machine, Automatic, Four-Spindle, Heavy-Duty, Model "G-A," Gridley

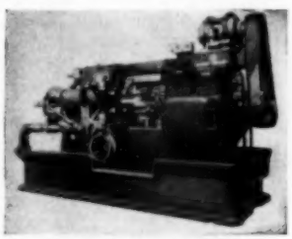
National Acme Co., Cleveland, Ohio. [Vol.72,p.781]

Heavier construction to permit greater accuracy at continuous maximum working speeds is featured in this automatic, which has a range of spindle speeds from 35 to 500 r.p.m. The feeds with a ½-in. rise on the cam range from 0.001 to 0.140 in. Models are available in the following sizes: 1⅜, 1⅝, 2⅛, and 3⅛ inches.

Four independently operated cross-slides are furnished with each machine as standard equipment. The two lower slides are operated by a separate drum directly underneath, and in the center of each slide. On the outer ends of these drums is an extra set of cams, which operate the top slides. Through this construction lever connections are eliminated.

The cross-slides have been enlarged and strengthened. Two bottom slides do the rough forming, whereas the two top ones perform the finish forming and the cutting-off.

End-working tools are carried in a heavier main tool slide, which works back and forth on the stem of the spindle carrier. This main tool slide supports



the cutting toolholders, which are mounted on the four corners of the tool slide.

Improvement has also been made in the stock stop, which is of the vertical disappearing type. This arrangement permits standard tooling on the fourth spindle.

The column of the machine in front of the gearbox section is bored in line with the spindles in the second and third positions to permit the use of high-speed drilling attachments or accelerated boring or reaming attachments.

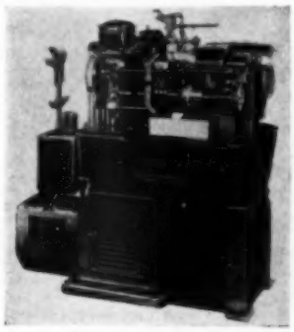
— 100 —

Screw Machines, Automatic, High-Speed, Nos. 00 and OOG

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.970]

These are now provided with a greater range of speeds and are adaptable to the manufacture of parts from steel as well as brass, aluminum, and other freely cut metals. Both the work spindle and the die spindle have a range of 20 speeds each, providing 30 combinations of speeds. The speed ranges are obtained through change gears, belts, and pulleys.

All important features of the previous designs have been retained. Both the work and the die spindles run in the same direction, but at different speeds, the difference in speeds permitting the die to run on at the required surface speed. The trip-



ping mechanism provides an accurate control for the length of stock threaded.

The screw threading machines can be equipped with a vertical slide for cutting off, leaving the cross-slides free for forming and other operations. The automatic rod magazine is also adaptable to use with machines of this type to decrease the attention required.

Certain classes of nuts and tapped parts can be manufactured on these machines by mounting a tap in place of the die in the die spindle. The die spindle can be arranged for holding a drill, a maximum drilling speed of 12,000 r.p.m. being available for very small drills.

— 101 —

Rod Magazine, Screw-Machine, Automatic, No. 2

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.972]

This automatic rod magazine for the No. 2 automatic screw machine is adaptable to overhead- and motor-driven machines in both regular and high-speed types. It is similar in construction and operation to the sizes previously announced.

The mechanism of the rod magazine is connected with the feeding arrangement of the screw machine in such a manner that, when the end of the bar on which the machine is working passes a certain point,

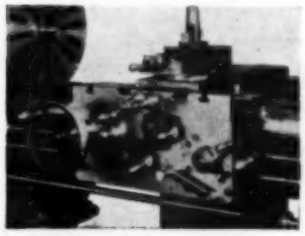
the machine, (except the spindle), is automatically stopped, the mechanism of the rod magazine engaged, and a new rod fed from the magazine into the spindle to the working position. The machine is then started automatically. A sufficient number of rods can be inserted in the magazine to keep the machine operating for a long period.

— 102 —

Apron Feed Mechanism, Lathe, "Kant-Slip"

Bradford Machine Tool Co., 657-671 Evans St., Cincinnati, Ohio. [Vol.72,p.930]

Since jolts or jerks in the apron gears or other apron mechanisms are frequently not only a source of much damage to these parts, but also to the finished work in the lathe, the apron feed mechanism illustrated has been brought out.



It is claimed heavy cuts are taken with ease and without sacrifice of safety, even though the carriage is fed by power up against the headstock or the tailstock.

Features claimed are: A powerful positive disengaging as well as engaging movement; smooth feed engagement and disengagement; simplicity, neatness, and compactness, and no pressure needed to keep the feeding mechanism engaged.

This apron feed mechanism is being applied to the company's line of standard lathes from 14- to 48-in. swing, inclusive.

— 103 —

Boring Bar, "Wedge-Lock"

Wedge-Lock Tool Co., 2523 No. Keeler Ave., Chicago, Ill. [Vol.72,p.1040]

This boring bar having "Wedge-Lock" construction is made in two styles, one for engine lathes, the other for turret lathes. Tool No. B-58 illus-

trated is for engine lathes. It has a rectangular shank, whereas the turret lathe has a round shank. Both shanks are made of alloy steel forgings, and the nose is slightly tapered and cut away behind the tool-bits to provide sufficient chip clearance. The tool bits are easily and quickly removed and replaced without the use of wrenches. Depressed locking pins are available to permit

boring of holes slightly larger than the diameter of the bar. Either square or half-width tools may be used.

Both styles of boring bars come with four sizes of tool slots, namely, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{7}{16}$, and $\frac{3}{4}$ in. Corresponding shank sizes for the engine-lathe boring tools are 1x2½x10 in.; ⅞x1½x9 in., ¾x1½x8 in., and ⅝x1½x7 in. Round shanks are 1¾, 1½, 1¼, and 1 in. in diameter.

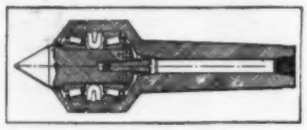
— 104 —

Center, Roller-Bearing

Sturdimatic Tool Co., 12121 Cardoni Ave., Detroit, Mich. [Vol.72,p.708]

These centers employ Timken bearings to take heavy thrusts and will operate at the high speeds necessary when tungsten-carbide tools are employed. They are made in seven sizes with Morse tapers from 2 to 7, and are also available in Jarno, B.&S., and special tapers.

The rotating center point is made of hardened steel in any



special size or shape to suit requirements. The two inner races, together with the rotor, washer, spring and screw, rotate as one piece. A pipe-tapped hole in the tapered shank receives an Alemite cup.

A special feature is the cushion spring, which prevents the front outer race of the bearing from sliding into the housing until an overload is imposed.

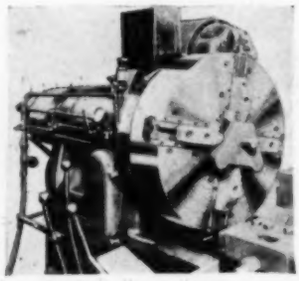
— 105 —

Chuck, Pneumatic, Duplex, Four-Jaw

Hannifin Manufacturing Co., 621 S. Kolmar Ave., Chicago, Ill. [Vol.72,p.891]

This four-jaw duplex pneumatic chuck will hold odd-shaped pieces where the usual three-jaw chuck would be impractical. It is designed to replace special chuck fixtures or hand-operated four-jaw chucks.

The duplex pneumatic chuck



centers work across two diameters regardless of variations from nominal dimensions, applies uniform pressure on all sides, and permits loading and unloading the chuck jaws as quickly as with a conventional three-jaw air chuck. The chuck will take care of variations up to ¾ in. across two diameters. It is a combination of two independent two-jaw chucks.

A special two-in-one air cylinder has been developed for the operation of this chuck. The smaller piston telescopes inside the larger.

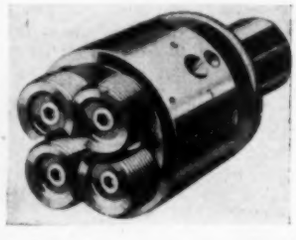
The duplex chuck is available in sizes of 15, 18, 21, 24 and 28 in.

— 106 —

Dieheads, Opening, Revolving-Type, Style DR, "Namco"

The National Acme Co., Cleveland, Ohio. [Vol.87,p.782]

By the use of circular chasers, the style DR "Namco" opening dieheads can be made to give long runs on parts demanding high accuracy. These dieheads are built for use in automatic screw machines and other ma-



chine tools employing rotating die spindles. The tools have only three major parts—body, cup, and adjusting plate—and all parts are made of special steel, hardened, and, in some cases, ground.

It is claimed that the use of circular chasers gives more than ten times the ordinary life and permits unusual runs between grinds. These chasers are accurate circular thread forming tools mounted upon quickly removable chaser blocks, the faces of which are ground to the exact helix angle of the thread.

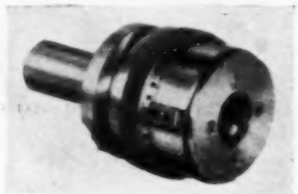
Style DR dies are built in six sizes, ranging from a minimum capacity of $\frac{5}{16}$ up to a maximum capacity of 2¾ inches.

— 107 —

Diehead, Automatic, Self-Opening, Model "C"

Rickert-Shafer Co., Erie, Pa. [Vol.72,p.894]

No screw driver, wrench, or other device is required for changing chasers in the Model "C" revolving-type diehead. The body and shank of the tool are of one piece. A tongue



and groove joint is employed to hold the chasers against the chaser retainer. The chaser retainer is made in two pieces to allow accurate grinding of angular surfaces.

The Model "C" diehead is locked in threading position by two trip dogs located diametrically opposite. This prevents cramping. The chasers can be removed and replaced by lifting the latch.

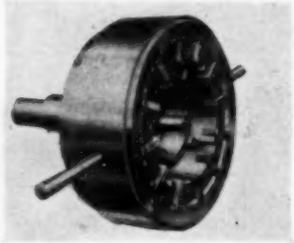
The Model "C" diehead is made in the following sizes: $\frac{5}{16}$, $\frac{9}{16}$, ¾, 1, 1¼, and 1½ in. These sizes, respectively, give the following ranges: $\frac{1}{16}$-$\frac{5}{16}$; $\frac{3}{8}$-$\frac{9}{16}$; $\frac{1}{2}$-1; ¾-1¼; ⅞-1½ inches.

— 108 —

Diehead, Self-Opening, 14-Inch

Modern Tool Works, Division of the Consolidated Machine Tool Corporation of America, Rochester, N. Y. [Vol.72,p.896]

With capacity for cutting threads from 10 to 14¼ in. in diameter, this stationary diehead is claimed to be the largest diehead ever made for tur-



ret lathes, the outside diameter being 21½ in. and the length, less the shank, 8½ in.

The capacity is obtained by the use of a chaser holding ring for the smaller threads. This ring is fitted into the bore of the diehead. Chaser slots in the ring and diehead are ground together.

The cam ring is mounted on two sets of roller bearings. Each chaser, of which there are 12 to a set, is held in its slide by one screw. The chaser slides are cammed to the large cam ring so that, at the point of opening, each chaser is pulled positively out of the cut.

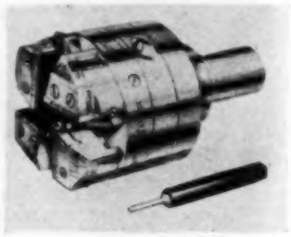
There are four points to lock the die in its closed position. Adjustment for size is simple, and the diehead is arranged with an adjustable internal trip.

— 109 —

Diehead, Internally-Tripped, "Landex"

Landis Machine Co., Waynesboro, Pa. [Vol.72,p.1040]

Close-to-shoulder threading on work which varies in length and where a uniform length of thread is required is effected by the use of this internal tripping attachment on the "Landex" head. The tool is particularly adapted for threading operations where a fixed stop cannot be used to open the die head, or where the work is held loosely in a fixture. The trip-



ping mechanism consists of a plunger held in the shank of the head. This plunger is adjustable and can be set to any thread length within the capacity of the head. When used on automatic screw machines it eliminates the necessity of accurate timing of the head opening cam.

The internally tripped "Landex" head is made in sizes for threading from $\frac{5}{16}$ to 2 in. in diameter.

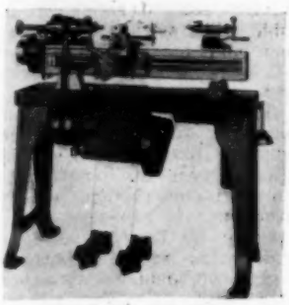
— 110 —

Drive for Bench Lathes, Speedbox

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.725,p.820]

For use on its own bench lathes or those manufactured by other concerns, the above concern has announced a speed-box motor drive. In addition to doing away with overhead belts, starting and stopping the lathe and changing from low to high speeds can be effected without manual gear shifting.

The speedbox motor drive is attached to the under side of the bench or oil pan stand, or mounts inside of a Rivett oak cabinet. Any standard a.c. or d.c. motor of suitable size can be mounted on the rear face of the speedbox. Drive is by



silent chain from the motor to the lower shaft of the speed box.

Six forward speeds are secured by this drive, and by the use of a reversing switch six reverse speeds are available.

— 111 —

Grinder, Toolpost, Flexible-Shaft, Type HL-5

R. G. Haskins Co., 4636 West Fulton St., Chicago, Ill. [Vol.72,p.205]

Such work as internal grinding of all kinds, grinding lathe centers and rolls, face grinding, and grinding on a planer or shaper is possible on the flexible-shaft toolpost grinder, No. HL-5. A large range of attachments is available, among which are the external grinding

spindle and the combination lathe grinding spindle for internal and external work.

Specifications: $\frac{7}{16}$-in. x 5-ft. flexible shaft; motor speed, 1,750 r.p.m.; motor swivels full 360 deg., 1-in. special, endless, high-speed belt; spindle rest on countershaft; three-leg, extra-heavy pedestal with ball-bearing casters, and shipping weight, 145 lb. The unit is furnished with an external lathe attachment, two wrenches, and two 5-in. and two 6-in. grinding wheels.

— 112 —

Grinding Attachment, Worm, for Engine Lathes

Newark Gear Cutting Machine Co., 69 Prospect St., Newark, N. J. [Vol.72,p.319]

This worm grinding attachment, for use on 16-, 18-, or 20-in. lathes, grinds the threads of worms from about 1 in. in diameter to as large worms as the lathe will swing. The depth of thread ground ranges to about $1\frac{1}{2}$ in. with an 8-in. wheel and to $2\frac{1}{4}$ in. with a 10-in. wheel. The lathe cross-slide feed screw is used for controlling the depth. A feed screw for side cuts is provided with the attachment. Adjustments for both the helix angle and the pressure angle

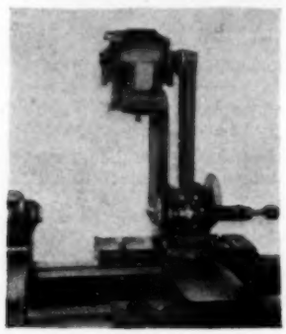
are also provided. An index faceplate with notches for use in grinding multiple-thread worms is available. Usually one side of the worm is ground, finished, and then turned end for end and the other side finished.

— 113 —

Grinding Attachment for Engine Lathes

R. M. Clough, Meriden, Conn. [Vol.72,p.320]

This external and internal grinding attachment for lathes of from 13- to 18-in. swing is carried on the toolblock and, in turn, carries a vertical



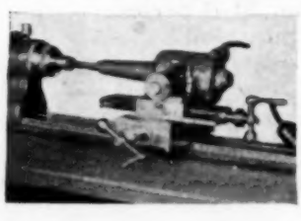
bracket for the motor. The external grinder uses a 5-in. wheel running at a speed of 2,500 r.p.m.

— 114 —

Grinder, Bench Lathe, Slide-Rest

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.72,p.896]

Internal and external grinding, face grinding and grinding between centers can be handled on Rivett bench lathes by the addition of an integral, motor-driven slide-rest grinder. The attachment may be mounted in either the Rivett eccentric-type toolholder or the conventional rocker toolpost, and the compound slide-rest affords convenient setting at any angle.



The switch permits convenient starting and stopping.

— 115 —

Spindle Nose, Flanged

The Monarch Machine Tool Co., Sidney, Ohio. [Vol.72,p.819]

As a result of using the flanged spindle nose, it is claimed that the machine user can obtain faceplates and chucks from most manufacturers of these accessories to fit perfectly on the spindle. It is also claimed that a faceplate may be removed and replaced on the nose and lined up within 0.0002 in.

The Monarch spindle is an upset forging, the flange being forged integral. No adapter plates are necessary in mounting chucks.

The $8\frac{1}{4}$-in. diameter flange is used on all lathes up to and including the 20-in. size, whereas the 11-in. flange is used on all larger machines.

— 116 —

Toolholder, Turret Lathe, "Wedge Lock"

Wedge-Lock Tool Co., 2523 No. Keeler Ave., Chicago, Ill. [Vol.72,p.1040]

This turret lathe toolholder embodies the same principle of "Wedge-Lock" construction as for the multiple toolholder described on page 837, Vol. 70, of the *American Machinist*. Two wedge pins are used; by tapping one with a hammer the tool is locked in position, by tapping the other it is released.

The toolholder is designed for use in the square toolpost, the shank being of L-section with the wide side bearing against the turret post. It is held in position by set-screws.

Three sizes with tool slots are as follows: $\frac{7}{16}$x$\frac{7}{8}$ in., $\frac{5}{8}$x$\frac{3}{4}$ in., and $\frac{7}{8}$ to $\frac{1}{8}$ in. Corresponding shanks are $\frac{11}{16}$x$1\frac{1}{4}$ in., $\frac{11}{16}$x$1\frac{1}{4}$ in., and $\frac{7}{16}$ to 1 in. in section.

— 117 —

Toolholders for Tungsten-Carbide Bits

Armstrong Brothers Tool Co., 317 No. Francisco Ave., Chicago, Ill. [Vol.72,p.1048]

Toolholders having an "undershot" form that gives support close to the cutting point have been placed on the market by the above concern. These toolholders are claimed to be extremely rigid and to hold the bit at the correct cutting angle for tungsten-carbide, straight and without top rake. They are of

two types: one broached for a regular square bit; and the other broached for a rectangular bit deeper than it is broad.

Milling Machines

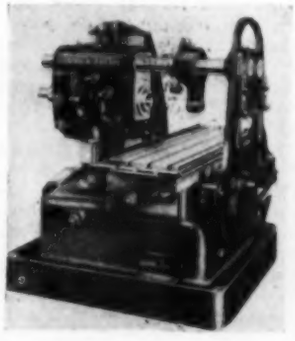
— 118 —

Milling Machine, Plain, Redesigned, No. 13 B

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.238]

The feed ranges and the capacities are nearly the same as those of the previous machine, being as follows: longitudinal feed, 34 in.; transverse adjustment of spindle, 4 in., and vertical adjustment of spindle, 12 in. The table is 32 in. above the floor; the usual conveyor height.

The bed, table ways, and column are cast in one piece. The table ways are 42 in. long and support the table for almost its entire length. Cross adjustment for the spindle of about 4 in. is obtained through the



7¼-in. sliding sleeve. The spindle head is massive and can be adjusted without cramping. The entire surface of the table is finished and the feed is by a revolving nut.

The overarms are of the double type. The outer brace can be left attached to the bed at all times. Arbor yokes, cutters, and the arbor can be removed without disturbing the outer brace.

Power enters the machine through a self-adjusting multiple, dry-disk clutch. The drive is entirely through splined shafts and gears.

The redesigned No. 13B machine can be operated with entirely automatic table functions when desired, or by means of adjustable dogs a variety of operating cycles can be had.

— 119 —

Milling Machines, Plain and Universal, No. 4

Cincinnati Milling Machine Co., Cincinnati, Ohio. [Vol. 72,p.748]

The general characteristics of the No. 3 milling machine, described on p. 603, Vol. 71, of the *American Machinist*, are evident in the No. 4 plain and universal types. Sixteen spindle speeds ranging from 14 to 450 r.p.m. and sixteen table feeds ranging from ¾ to 30 in. per min. are important specifications. The latter are changed by an automatic power shift mechanism controlled from either the front or rear.

Independent directional control levers for cross, vertical, and longitudinal movements of the table are provided. Each of the movements also has power

rapid traverse with the spindle stopped or running. The rates are: longitudinal, 100 in.; cross, 50 in.; and vertical, 50 in. An automatic trip out for the power quick traverse is provided on the plain machine. Rear hand adjusting cranks are provided for getting cross and vertical adjustments.

Anti-friction bearings are used throughout the spindle drive. The rectangular overarm has been increased in size, and two aluminum arbor supports are provided. The latter are self-oiling. In addition, simplified overarm braces are standard equipment.

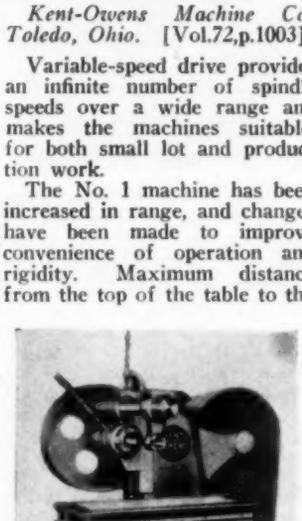
— 120 —

Milling Machines, Knee-Type, Heavy-Duty Improved, Nos. 1 and 2

Kent-Owens Machine Co., Toledo, Ohio. [Vol.72,p.1003]

Variable-speed drive provides an infinite number of spindle speeds over a wide range and makes the machines suitable for both small lot and production work.

The No. 1 machine has been increased in range, and changes have been made to improve convenience of operation and rigidity. Maximum distance from the top of the table to the



center line of the spindle is 16½ in. The saddle has also been lengthened. Improved handles are used for locking the saddle to the knee and the knee to the column. The knee is now a box-type casting with a solid top and closed front.

Specifications: table working surface, 22 by 5 in.; vertical feed, 6½ in.; cross saddle adjustment, 5 in.; table travel, 17 in., and spindle speeds, 120 to 1,200 r.p.m.

The No. 2 unit now has an idler upon the spindle drive belt. Specifications: table, 28 by 7 in.; maximum distance from spindle to table, 17½ in.; head fed vertically, 6½ in.; cross saddle adjustment, 7 in.; total table travel, 22 in.; spindle speeds, 100 to 1,200 r.p.m.

— 121 —

Milling Machine, Manufacturing "Number Three-W" Rigidmil

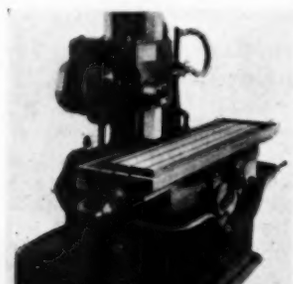
Sundstrand Machine Tool Co., Rockford, Ill. [Vol.72,p. 236]

The "Number Three-W" incorporates features intended particularly to increase the application of special single- and multiple-spindle heads. The machine is heavier than the standard "Number Three" and has a higher column, providing greater flexibility for special heads. It also has a compartment for chips, with a drop door for clean out in the base. The saddle is of larger proportions, as is the table, and an increased minimum power feed travel is provided.

Two distances from the spindle column to the center of the table are provided. The machine having the shorter distance, 12⅝ in., is known as the "Number Three-W-1," and the other, 17½ in., is known as the "Number Three-W-2." Automatic control can be provided to return the table to the starting or loading position automatically.

A one-piece casting embodies the base, column, and saddle. A National Standard spindle nose with a hole 2⅜ in. in diameter at the large end and a 3½-in. taper per foot are features. The entire spindle assembly is carried in the steel quill. The overarm is a solid rectangular steel forging.

Working surface of the standard table is 16½ by 60 in., the table being 32½ in. from the



floor. A longer table, 16½ by 72 in., can be supplied. For the standard 34-in. feed this is increased to 50 inches.

Drive by belt or motor may be used. Two sizes of motors are recommended, 5 and 7½ hp. The main drive clutch is a sensitive unit of the multiple-disk type. Spindle speeds range from 17 to 241 r.p.m., and the feeds range from 1.9 to 21.4 per min. A vertical spindle head and rotary table are available.

Specifications common to both machines: vertical adjustment of spindle head, 12½ in.; minimum distance center of spindle to top of table, 3½ in., maximum, 16 in.; horizontal adjustment of spindle, 3½ in., and distance center of spindle to underside of overarm, 7 inches.

— 122 —

Milling Machine, Manufacturing, No. 31-B Series, "Supermil"

DeVlieg Machine Tool Co., Jackson, Mich. [Vol.72,p.745]

Ability to mill both with and against the feed on the No. 31-B series "Supermil," makes possible continuous milling with fixtures secured rigidly to the table. The machine is designed and built for production work of small or large quantities and heavy or accurate work.

Two Timken bearings support the alloy steel spindle, which is hardened and ground. The nose is of the National standard construction, and the overarm is a ram-type casting clamped by heavy T-members and wedge bolts. Arbor supports are provided with adjustable bushings. Vertical and cross adjustments of the spindle head are provided.

The entire main drive bracket, the screw, nut, feed mechanism, table ways, and control unit are all automatically oiled

from a central pumping system. The entire spindle head is submerged in oil.

Specifications: table feed, 30, 36, or 42 in.; working surface of table (30-in. model), 16x66 in.; cross adjustment of spindle, 2 in.; maximum distance center of spindle to top of table, 14 in.; minimum, 3 in.; center of spindle to underside of overarm, 6½ in.; number of spindle speed pick-off gears furnished, 2; range of speeds (pick-off gears), 20 to 180 r.p.m; range of feed with pick-off gears, 1.7 to 20 in. per min.; motor, 10 hp., 1,800 r.p.m.; net weight of standard machine (30 in. unit), 7,500 lb.; floor space, 105x72 inches.

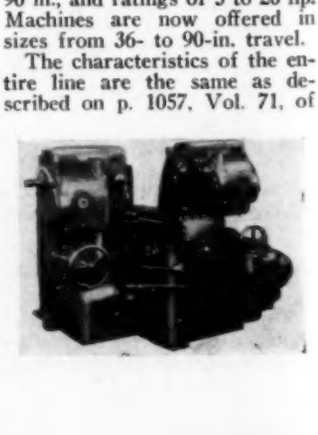
— 123 —

Milling Machines, Manufacturing, "Hydromatic"

Cincinnati Milling Machine Co., Cincinnati, Ohio. [Vol.72, p.783.]

A total of eighteen plain and eighteen duplex machines are now built. This gives a range having table travels from 24 to 90 in., and ratings of 5 to 20 hp. Machines are now offered in sizes from 36- to 90-in. travel.

The characteristics of the entire line are the same as described on p. 1057, Vol. 71, of



the *American Machinist*. They may be summarized as follows: Heavily ribbed bed with ample room for chip disposal; Cincinnati locked hydraulic table feed; automatic dog-controlled intermittent table feed; power quick traverse of 220 in. or 300 in. per minute, depending upon the size of the machine; inclosed motor drive; anti-friction bearings throughout the spindle drive, with double mounting on the front and rear of the spindle; only four gear contacts in the drive; spindle reverse and cross and vertical adjustments of the spindle; rectangular overarm; centralized control at the left front side of the machine, and an automatic spindle stop.

The plain machine is supplied with the one-way or two-way table feed cycle, while the duplex machine is supplied with only the one-way cycle.

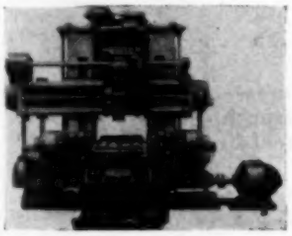
— 124 —

Milling Machine, Planer-Type, "Hypro"

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.72,p.317]

Requirements for high-production milling are met in this "Hypro" planer-type miller. Independent movements of the head, spindles, and table have been provided, enabling the operator to feed one head and rapid traverse another.

Both bed and table have forced lubrication to the ways. The bed is twice as long as the table. Drive to the table is effected through a worm gear, herringbone gears in the bed, and a bull wheel and rack. The complete train of gears is flooded with oil. A 4 to 1 reversible, variable-speed motor furnishes the drive. There are



fifteen different speeds available from the motor, and with the backgear thirty speeds are provided. The feed range is from ½ to 20 in. per min., with a high-speed return of the table at 20 ft. per minute.

The milling spindle is driven by means of a worm and worm gear. A two-speed box is provided to give independent speeds at all times. One motor drives the spindle in the two rail heads and the other supplies power to the two side heads. These heads are designed to utilize 50 hp. Quills have a vertical adjustment of 9 inches.

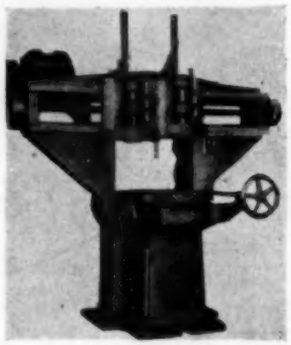
Each motor is supplied with a three-position push button.

— 125 —

Profiling Machine, Vertical, Two-Spindle No. 6

Frew Machine Co., 124 Venango St., Philadelphia, Pa. [Vol.72,p.278]

A clearance between the uprights of 25½ in. and a distance of 11¼ in. between the table and the cross rail illustrates the capacity of the No. 6 profiler. The height between the table and the crossrail can be increased. Both spindle slides



are provided with guide pins so that a master former can be set up on the fixture.

Drive to the spindle is by means of a backshaft which runs through the cross arm and which is driven by either belt or motor.

Longitudinal movement of the table through 24 in. is made by means of a handwheel. On special order, a table 37 in. long by 23 in. wide can be provided.

Specifications: Working surface of table, 24x20¾ in.; movement of cross-slide, 42 in.; distance between spindles, 15¾ in.; center distance between spindle and guide pin, 7 in.; spindle taper, No. 10 B & S; horsepower required, 3; floor space, 48x82 in., and weight, 4,000 pounds.

— 126 —

Die Sinking and Milling Machine, No. 3

Reed-Prentice Corporation, Worcester, Mass. [Vol.72,p.392]

A Timkenized longitudinal feed screw on the saddle and a rotary table are the principal improvements. At the front and right-hand end of the table is a handle for the hand feed, providing a 1 to 1 ratio.

The machine also has a 16½-in. rotary table equipped with an oil trough and hand and power feed. The handwheel for the hand feed is located at the front of the machine instead of at the rear as formerly and provides centralized control. The ball bearing spindle and pulley construction permits spindle speeds up to 4,000 r.p.m. Other features of the machine

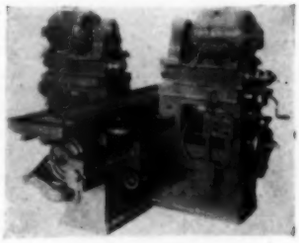
are the same as described on page 874, Vol. 70, of the *American Machinist*.

— 127 —

Milling Machine, Spline

William K. Stamets, Jenkins Arcade Bldg., Pittsburgh, Pa. [Vol.72,p.542]

This machine will cut slots through bars up to 9 in. in diameter, and single keyways in shafts up to 15 in. in diameter. It has a maximum distance between spindle ends of 26 in., minimum of 4 in., and a maxi-



mum spindle infeed of 5 in. The distance from the center of the spindle to the table is 8 in., the working surface of the latter being 66x14 in. The standard table travel is 24 in., and speeds range from 4 to 20 in. per min.

Precision roller bearings carry the spindles, each of which is driven by a separate 2-hp. motor. There are four spindle speeds.

The table is driven by a screw direct connected through a silent chain and speed variation device to a 2-hp. 750 r.p.m. motor.

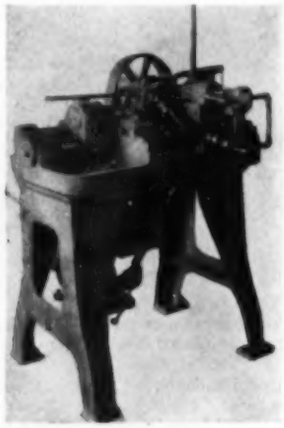
— 128 —

Milling Machine, Thread

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.72,p.710]

Designed to thread taps by means of a hob milling cutter at one revolution of the work, this threading-milling machine will mill either straight or taper taps, with or without radial relief, up to the 2-in. size. The lead is produced by hardened and accurately ground cams mounted directly on the work spindle.

The tap blanks are driven by their squared ends, and no dogs nor clamping devices are required. The tail center is operated by a long vertical lever on the head of the machine.



Floor space, 30x36 in.; weight, 1,200 lb.; motor required, ½ hp.

Shapers

— 129 —

Shaper, Draw-Cut, with Overhead Ram Bearing Extension

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol.72,p.889]

To insure rigidity and eliminate spring or deflection of the ram, regardless of the length of stroke, an overhead extension ram cap bearing and screw-type outer support have been applied to the Morton heavy-duty, draw-cut shaper. This construction insures alignment of the table and work at all times. It can be furnished on the 32-, 38-, 48- or 60-in. stroke machines.

A special toolhead is used, which has an adjustable taper

bearing, forming a support to the cutting tool, both top and sideways, and minimizing deflection of the ram. It is fitted accurately to the threaded end of the ram and may be held at an angle by means of a quick clamping device. It is also provided with a radially adjustable bearing above the cutting tool and with a wedge taper bronze gib for compensating for wear. Rapid power traverses, horizontal and vertical, are also standard.

— 130 —

Shapers, Crank-Type, Klopp

American Klopp Shaper Co., 50 Church St., New York, N. Y. [Vol.72,p.931]

Crank-type Klopp shapers, built in Germany, are being introduced into the United States. These shapers are available in 10- to 36-in. strokes.

Box-ribbed design is employed for the column. The foot for the table support is inclined at an angle of 30 deg. to the vertical to prevent deflection. The ram employed has a

V-type bearing. The crossrail is of box construction, and the sturdy toolhead has a maximum swivel of 30 degrees.

Specifications of the several sizes of the Klopp shaper: strokes, 10 to 36 in.; maximum horizontal travels of table, 14 to 35½ in.; maximum distances ram to table, 11½ to 16½ in.; ram, strokes per min. 36 and 110 for smallest and 35 to 54 for largest unit; sizes of tables, 7½x9½ to 16x36 in.; net weights, from 770 to 5,720 pounds.

— 131 —

Shaper, Railroad, 36-Inch, "Super-Dreadnaught"

Joseph T. Ryerson & Son, Inc., 16th and Rockwell Sts., Chicago, Ill. [Vol.72,p.1011]

Quick and easy repairs of locomotive parts are facilitated by the 36-in. "Super-Dreadnaught" shaper distributed by the above concern and manufactured by the Ohio Machine Tool Company, Kenton, Ohio. A special extension head is used with either the single or double-driving box attachment for machining the crown brass fit and

cellar seat. Other attachments include: a fixture for the shoe and wedge fit; rod brass attachment; shell or crown brass attachment; shoe and wedge chuck; crossheads; and a fixture for machining electric locomotive driving wheel boxes.

The ram and rail bearings are large, eliminating chatter.

All control levers are grouped within a radius of 12 in. Lubrication is furnished by an automatic force-feed system.

— 132 —

Grinding Head, Planer, Special

Cincinnati Planer Co., Cincinnati, Ohio. [Vol.72,p.353]

This attachment can be applied to any size planer. The illustration shows a 30-in. medium pattern planer arranged for grinding with a cup wheel

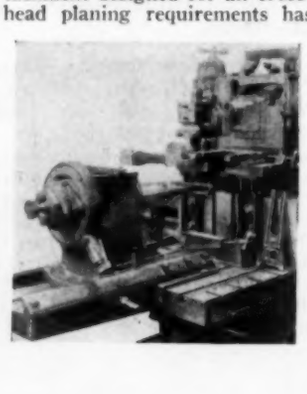
driven by a 3-hp. motor. Up and down movement for setting the wheel can be made from the end of the rail or by means of a crank on the head. Power cross feed is also supplied.

— 133 —

Planing Attachment, Crosshead

Morton Manufacturing Co., Muskegon Heights, Mich. [Vol. 72,p.894]

Applicable to the above concern's 38-, 48- and 60-in., high-duty, draw-cut shapers, an attachment designed for all crosshead planing requirements has



been placed on the market. The base is heavily ribbed and is designed to be bolted to the lower table of the machine. It is relieved on the inside to permit the maximum swing of the largest crosshead.

The headstock is fitted to the slide on the base and provided with a rack and gear for moving it. It thus forms the journals for the arbor on which the crosshead is centered. When the crosshead is mounted on the arbor, it can be rotated to the proper cutting position by means of a worm gear, and can also be unlocked so that the crosshead can be rotated by hand. The headstock is planed and slotted to receive special gages.

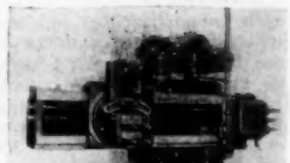
The arbor forms the support for the crosshead. It holds the crosshead central from the tapered piston rod hole, and is designed so that it is self-adjusting. The two self-adjusting mandrels furnished take in the entire range of sizes and tapers.

— 134 —

Side Head for Shaper-Planer

Rockford Machine Tool Co., Rockford, Ill. [Vol.72,p.969]

For machining locomotive driving boxes, an attachment in the form of a side head securely



anchored to the L-type rail, and having a rigid back support clamping to the rear of the column, may be had for the Rockford hydraulic shaper-planer. As the hydraulic shaper-planer is built in 42-, 66-, and 90-in. strokes, one or more boxes may be machined at one time. Both the seat for the brass and the bearings for the oil cellars are machined in one set-up. All surfaces are machined from the same center line.

This attachment has both hand and power feeds, as well as rapid traverse in all directions. The entire unit is easily removed at any time and replaced by the standard side head.

The hydraulic-shaper-planer was described on page 681, vol. 71.

Presses

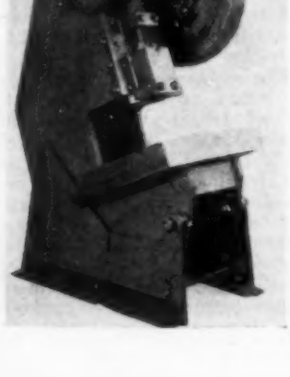
— 135 —

Presses, Punch, All-Steel, "Verson"

La Salle Machine Works, Inc., 3013-3017 So. La Salle St., Chicago, Ill. [Vol.72,p.204]

Frames fabricated entirely of steel plates may be obtained in the "Verson" line of all-steel presses. The steel plates are welded into units, thus permitting great strength and rigidity with less bulk. The plates are machined before and after welding to assure alignment.

An important feature of this line is the fact that specifications may be obtained to suit the users' requirements. A press exactly suitable for work requiring large die space, bed area, depth of throat, and other features, which would ordinarily require large and heavy presses, may be obtained.

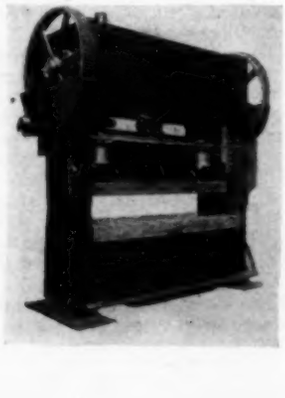


— 136 —

Presses, Bending, Straight-Side, Steel-Frame, "Verson"

La Salle Machine Works, Inc., 3013 South La Salle St., Chicago, Ill. [Vol.72,p.391]

This line of straight-side presses may be had with single, double, or triple cranks. The bed, overhead, uprights, ram, and bull gears are all steel-plate



construction, and are welded into units. This style of construction permits the presses to be built to the customer's specifications.

The heavier types of these presses include such features as motor adjustment of the ram, Texrope drive, one-shot lubrication, bronze-bushed main-bearings, Timken bearings on the back shaft and the flywheel, multiple-disk friction clutch, and shear pins on the backshaft.

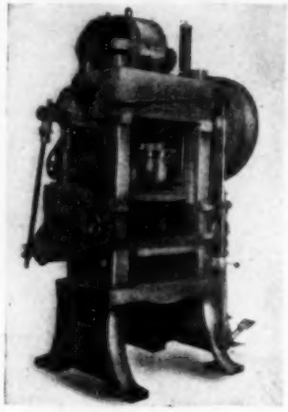
— 137 —

Presses, High-Production, with Scrap Shear

E. W. Bliss Co., 53rd St. and 2nd Ave., Brooklyn, N. Y. [Vol.72,p.471]

A scrap shear is now standard equipment on all high-production presses built by the above concern. The shear slide is driven from an eccentric on the extended crankshaft of the press through a standard ball joint connection. This eccentric is arranged so that the scrap cutter is timed 30 deg. behind the press slide, giving ample time for the pilots to locate the strip before the shear blades lock it.

The upper shear blade is mounted in an adjustable holder



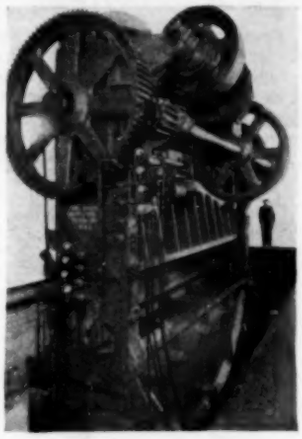
similar in function to that of the table of a squaring shear. This adjustment makes it possible to obtain the fine clearance between the blades that is essential in cutting thin stock. A plate backed by springs holds the stock down tight against the lower blade to secure efficient cutting.

— 138 —

Press, Crank, 400-Ton

Toledo Machine & Tool Co., Toledo, Ohio. [Vol.72,p.634]

A pressure at the bottom of the stroke of 3,500,000 lb. is obtained on this 400-ton crank press. The column weighs about 130,000 lb., the slide about 130,000 lb., and the bed 300,000 lb. complete. The total weight of the press is approximately 800,000 lb. The two steel gears on the crankshaft are 140 in. in diameter, with an 18-in. face. A bed area of 288 in. from right to left and 68 in. from front to



back is provided. The total height from the floor to the top of the arch is 36 feet.

The slide is counterbalanced by four air cylinders, which insure smooth operation. The slide operates at seven strokes per minute. The press is controlled by a patented multiple-disk friction clutch with independent brake.

Timken roller bearings are used in the flywheel. An air-operated control valve operates the clutch mechanism easily. The hand lever is used for emergency and for setting dies.

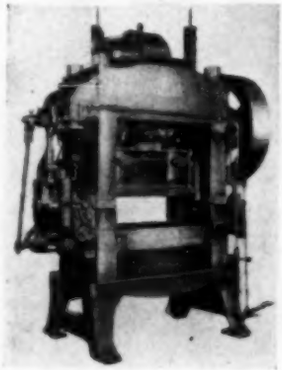
A 150-hp. motor furnishes power. The motor mounted on the front of the press is used for adjusting the slide.

— 139 —

Press, Double-Eccentric, High-Production, No. 675

E. W. Bliss Co., 53rd St. and 2nd Ave., Brooklyn, N. Y. [Vol.72,p.637]

The necessity for dead true accuracy on progressive die work, while operating at 150 to 250 strokes per min., has led to the addition of this 125-ton, double-eccentric, high-production press. This machine is designed with ample room for long follow dies. It has a bolster area of 27 in. from front to back by 35 in. from right to left,



and will handle dies up to 8 in. shut height. Standard stroke and die space dimensions can be readily changed.

To maintain rigidity at high operating speeds, the double-eccentric shafts are supported close up to the one-piece ball joint connections. It is claimed that the high-speed, double-roller grip feed on this machine is very accurate. When furnished for feeding strip stock, it is equipped with a mechanical starting gage operated by a treadle. Other features are: shear-type scrap cutter, rolling key clutch, flexible motor drive, and easy adjustments.

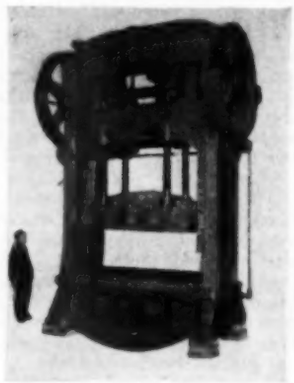
Specifications: Area of face of slide, 15x30 in.; adjustment of slide, 1¼ in.; standard strokes, 1 and 1½ in.; length of feed rolls, 15 in.; distance floor to top of bed, 32 in.; over-all height without motor, 108 in.; floor space overall, 62 in. front to back by 88 in. right to left, and approximate weight with feeds, 15,000 pounds.

— 140 —

Presses, Double-Crank, with Four-Screw Slide Adjustment

E. W. Bliss Co., 53rd St. and 2nd. Ave., Brooklyn, N. Y. [Vol.72,p.887]

A range of adjustments of several times the usual practice is found on these double-crank presses with four-screw slide arrangement. The machine illustrated has a range of 36 in. instead of 5 or 6 in. This large range of adjustment has been



provided to give flexibility in press equipment used by automotive stamping plants and shops engaged in jobbing or limited production work.

A pair of non-adjustable pitmans link the crankshaft to a sturdy crosshead. The latter carries four nuts suitably geared to an adjusting motor, with fine adjustment by hand. These nuts revolve in unison to advance the screws, which are flanged and bolted to the slide.

Specifications of the No. 8E, 108-in. press (illustrated) are: crankshaft and crankpin diameters, 8 and 9 in.; stroke, 16 in.; strokes per minute, 15; distance bed to slide, stroke down, maximum, 60, minimum 24 in.; thickness of bolster, 7 in.; width between uprights, 108 in.; area of bolster, 60x107 in.; area of slide face, 60x100 in.; area of bed opening, 29x99 in.; height from top of bed to top of crown, 196 in., to top of motor, 212 in.; floor space over all, 115x187 in.; main motor, 20 hp., 1,200 r.p.m.; adjusting motor, 7½ hp., 1,200 r.p.m., and weight, 140,000 pounds.

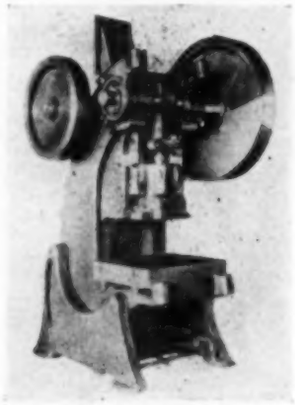
— 141 —

Presses, Punch, Open-Back, Inclinable, No. 7

Federal Press Co., Elkhart, Ind. [Vol.72,p.890]

This machine is made in both the flywheel and geared types. The latter, illustrated, has a capacity of 75 tons and a total weight of 14,000 lb. It is equipped as standard with Timken roller bearings in the back-gear bracket and has a bronze removable bushing in the flywheel.

The crankshaft is 4¾ in. in diameter at the main bearings and 5¼ in. in diameter at the crankpin. The machine is lubricated by large oil pockets in the caps, from which felt pads carry the oil to the shaft. The press has a bolster area of 28x



36 in., and a die space of 13½ in. from the bed to the ram, stroke down and adjustment up.

— 142 —

Press, Punch, No. 101

Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo, N. Y. [Vol.72,p.891]

This small, rapid press has provision for quick attachment of a motor bracket. It is particularly convenient for light punching and forming operations. The bracket carries a self-adjusting, ball-bearing, belt idler. It is of welded steel construction.

The No. 101 press is the smallest of the Niagara line. The shaft is of the eccentric type. Long V-shaped gibs guide the slide, controlled by a foot-

operated pin clutch. The No. 101 press can be furnished for bench use, or a table can be supplied.

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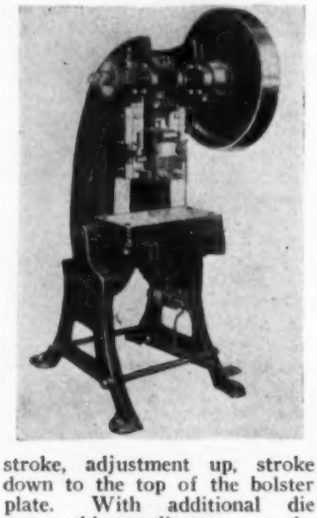
Press, Open-Back, Inclinable, No. 3

Loshbough-Jordan Tool & Machine Co., Renn St. & Sterling Ave., Elkhart, Ind. [Vol. 72,p.1009]

With capacity of 22 tons and a special 8¾ in. die space, this press has a standard 2½ in.



stroke, adjustment up, stroke down to the top of the bolster plate. With additional die space, this small press can be used on deep drawing jobs.

The press has a toggle control and a tripping latch. A safety stop is provided to prevent the clutch pin engaging the flywheel. This feature is used when setting dies or while the wheel is in motion.

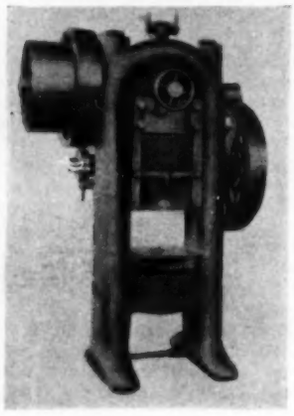
— 144 —

Presses, Toggle, Pillar

Zeh & Hahnemann Co., 182 Vanderpool St., Newark, N. J. [Vol.72,p.889]

Practically uniform speed of the slide toward the end of the down stroke is obtained on the pillar toggle presses. All units are particularly adapted for extruding collapsible tubes, but are also suitable for doing ordinary embossing work. The motion is controlled by the "Z. & H." non-repeating clutch.

The accompanying illustration shows the No. 12 size, which is rated to yield a pressure of 150



tons normally. This press weighs 12,000 lb., and is backgeared in the ratio of 6¼ to 1. It operates at a speed of 40 strokes per minute.

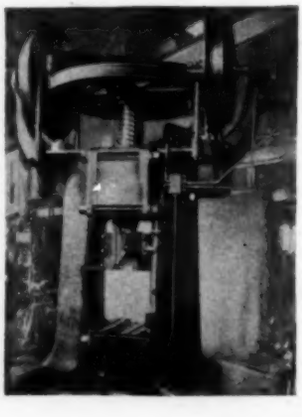
— 145 —

Press, Percussion, No. 25

Zeh & Hahnemann Co., 182 Vanderpool St., Newark, N. J. [Vol.72,p.747]

This machine weighs 50 tons, but is not the largest size that can be manufactured. Its frame is made of a steel casting and the main screw is made of tool steel, heat-treated. This screw is 14 in. in diameter. The press has a height of 18½ ft. over all and requires 50 hp. for operation. It is used to produce hot-pressed brass parts, but is also adapted for embossing work and for hot or cold pressing of steel parts.

Although the No. 25 press is rated to yield a pressure of 625 tons, a maximum of 1,800 tons was obtained under test. Energy stored in the flywheel amounts to 50,000 ft. lb. Pneumatic control is furnished. The ram reverses automatically at the end of the down stroke.

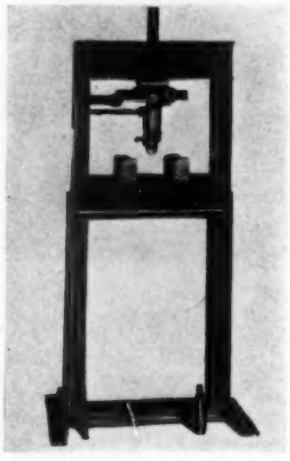


— 146 —

Press, Utility, "Simplex"

Simplex Tool Co., Woonsocket, R. I. [Vol.72,p.279]

Pressures up to 80,000 lb. can be exerted in this press developed for toolroom and machine shop use. Three different leverages, each having a different speed and power can be



obtained. The low speed has a power of 4,000 to 1.

The press will bend cold a piece ½ in. thick by 4 in. wide.

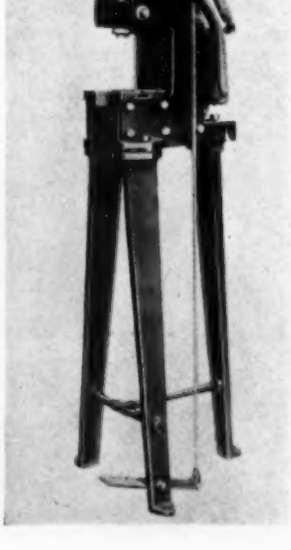
Specifications: over-all height, 60 in.; width between the frame members, 21 in.; travel of screw, 8 in., and space between side members, 4¾ inches.

— 147 —

Press, Arbor, "Hopkins"

Tomkins-Johnson Co., Jackson, Mich. [Vol.72,p.933]

Arbor presses in 1,000-, 4,000-, 6,000-, and 12,000-lb. sizes have been placed on the



market. The side members are made of steel plate, and the ram has two bearings. Punches or assembling tools can be bolted to the ram, and fixtures can also be bolted to the table by use of the T-slot.

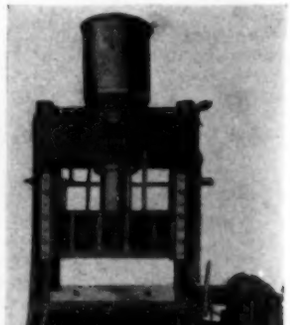
— 148 —

Presses, Hydraulic, "Hydro-Power"

Hydraulic Press Manufacturing Co., Columbus, Ohio. [Vol.72,p.501]

These presses can be used for a wide variety of metal-working operations, such as blanking, coining, drawing, embossing, forming, offsetting, punching, piercing, sizing, stamping, and straightening. Each machine is a self-contained unit occupying less floor space than that of the usual hydraulic press. No accumulator is required.

The application of the operating pressure is governed by the "H-P-M" automatic control system. This system provides for a rapid motion of the press slide to the work, a moderate working or pressing speed, and rapid return or opening feed. Automatic control of the pressure applied to the work is an-



other feature. An emergency reverse is standard also.

Oil pressure required for the operation of the press is generated by means of a radial high-pressure pump.

The open-side bed type press shown is available in capacities from 150 to 2,000 tons and bolster dimensions from 60x36 to 216x72 in. The ram travel varies from 6 to 36 in. in 6-in. increments, and above 36 in. in 12-in. increments.

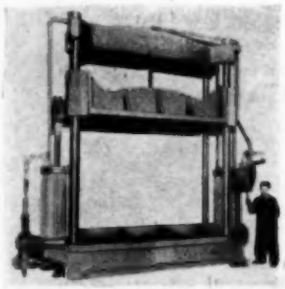
— 149 —

Die Spotitng Machine

Marquette Tool & Manufacturing Co., 6491 West 65th St., Chicago, Ill. [Vol.72,p.639]

Approximately 90 per cent perfect spotting of dies and the cutting of die-making time can be effected on this spotting machine, which is available from bench sizes to 100-ton models.

When the die is to be spotted, the movement of the slide or



ram is actuated by a compressed air from the regular shop supply, and can be regulated to the desired amount. After the dies have been spotted, further pressure may be introduced, should it be considered necessary to obtain a sample shell.

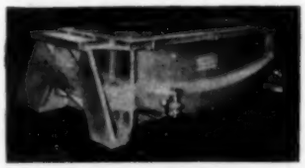
The bed and ram are held in alignment by four guide rods and the frame is so designed that deflection cannot occur. The ram can be operated at any desired speed.

— 150 —

Press Bed, Cushioned

Marquette Tool & Manufacturing Co., 6491 West 65th St., Chicago, Ill. [Vol.72,p.675]

A press bed with built-in pneumatic cushions that can be adapted to any size of press,



either old or new, has been announced. One of the chief advantages of the built-in design is that the mechanism forms an integral part of the bed and does not extend below it.

Simplicity of construction and the presence of few moving parts are evident. Two pneumatic cushions are built into the semi-steel base of the bed, and the design is such that the inside of the bed serves as a displacement chamber for the compressed air.

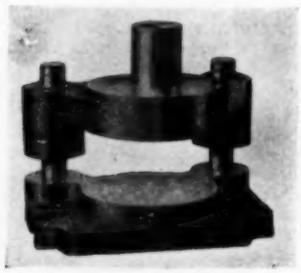
— 151 —

Die Sets

Producto Machine Co., Bridgeport, Conn. [Vol.72,p.355]

Eight styles have been added to the line of die sets manufactured for the mounting of punches and dies on the usual type of power presses, dieing machines, and high speed blanking presses. These sets may be obtained in semi-steel or in steel castings. In addition, they may be obtained in a chrome-nickel iron mixture.

Standard die sets for use on Henry & Wright dieing machines have been designed so



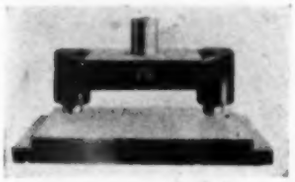
that they can be passed between the guide rods of the machine without removing the head.

— 152 —

Die Sets, Standardized

U. S. Tool Co., Ampere, N. J. [Vol.72,p.1008]

Both the die shoes and punch holders have been made heavier to assure alignment and long service. The leader pin bearings are about twice as long as formerly. Positive lubrication on bushed sets is afforded by the annular space between the two bushings. Unbushed sets have the leader pin bearing surfaces finished by the "Presglaze" process.



Die sets selected by the rated capacity will actually take dies of the same dimensions, and no allowance need be deducted for the bushing thicknesses. Furthermore, the leader pin bosses are placed at the corners of the rectangular die space and do not hinder stock as it is fed in either direction.

Several different styles of die sets are manufactured, both in the bushed and unbushed models. Steel-base sets are available.

Shearing Machines

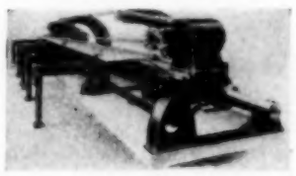
— 153 —

Shears, Plate, Beveling, Slitting and Trimming, "SN"

United Machine Tool Corporation, 75 West St., New York, N. Y. [Vol.72,p.315]

Long, clean, straight cuts—either square or beveled—can be made at exceptionally high speeds on the "SN" plate-slitting, trimming, and beveling shears introduced recently into the United States. Special operations include cutting bevels of 18 deg., 30 deg., and over on the end of plates for welding, with the plate lying flat in the machine.

The edge is produced with minimum power consumption by means of one continuous, automatic, rotary cutting operation. The rotary upper knife cuts against the stationary lower knife while the material is held



fast. Travel of the upper rotary knife is effected by means of a heavy block chain, which pulls the rotary knife carriage across the machine.

It is possible to start or stop the carriage by hand at any point of the travel on machines of capacities up to ⅜-in. plate, whereas on the larger machines push-button control is a feature.

Three types of these shears are available. The model B is throatless, and the length of the lower knife is equal to the maximum length of the cut. Model DB has throats in the housings for cutting long narrow sheets lengthwise. Any length of cut is obtainable and in a width corresponding to the throat depth. The third model, SB, is intended for trimming. It has a throat on the knife carriage, but is built with throatless housings. The width of cut is limited to the depth of the throat on the carriage.

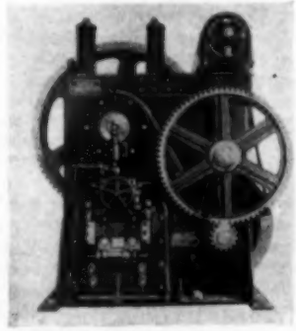
— 154 —

Shear, Billet, No. 15

Buffalo Forge Co., Buffalo, N. Y. [Vol.72,p.855]

Capacity for cuts on 7-in. square or 7¾-in. round bars of high-carbon steel is found in the No. 15 billet shear. The high-carbon armor steel plates are joined together by arc welding heavy bars between them.

An alloy steel casting is employed for the ram, the ends of which engage the plunger in a hardened tool steel seat, the end



being heat-treated for maximum wear. The plunger is counterbalanced and adjustable by two gibs.

The clutch and gear jaws are faced with interchanegable hardened tool steel pieces and thrust is taken care of by an adjustable bronze washer. The outboard bearing is of the self-aligning roller type.

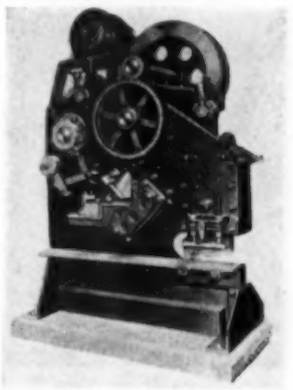
Forced-feed oiling takes care of every bearing, as well as the slide and other moving parts. The machine may be tripped by hand or foot, or locked to operate continuously.

— 155 —

Shears, Universal, Nos. 2½, 3½, and 4½

Buffalo Forge Co., Buffalo, N. Y. [Vol.72,p.968]

These universal shears are built in the same manner as the previous smaller machine and also have armor-plate frames.



One eccentric runs both tools, the shear and the bar cutter, in succession; that is, both tools are actuated during the course of one revolution of the eccentric, but not at the same instant.

Shear blades are reversible and provided with four cutting edges. The bar cutter is the same as on other "Buffalo" shears, and angles can be cut on a miter without inclining the stock.

The No. 2½ will shear through the center of ¾-in. plate, the length of knives being 12 in.

— 156 —

Shear Knives, "Kleenkut"

Heppenstall Forge & Knife Co., Pittsburgh, Pa. [Vol.72,p. 392]

Shear knives made from induction furnace steel are marketed under the trade name of "Kleenkut." These knives are for use in tin plate mills, sheet mills, strip mills and other industries where large daily tonnages are required. They are of an alloy composition claimed to give several times the life of ordinary tool steel shears.

Threading Machines

— 157 —

Tapping Machine, Automatic

Globe Tapping Machine Co., 488 John St., Bridgeport, Conn. [Vol.72,p.351]

Large pieces, as well as small pieces, can be tapped at the rate of 20 to 80 pieces per minute. According to the manufacturer, it will perform the following operations: tapping up to eight holes per second; insert screws or rivets; upset screw threads; spin rivets after insertion; light form after tapping; turn the piece automatically to tap in different positions; countersink; and handle light drilling. Five types of feed can be furnished, including magazine push, drum, conveyor, dial, and hopper.

Tapping heads are adjustable in location. Heads are driven by a reciprocating rack and pinion and intermediate steel spur gears. Each tap follows its own lead, permitting the use of different size taps. Taps are held by standard chucks.

Automatic feeding of parts is arranged for. Actual feeding is done by a conveyor, dial, drum, or push mechanism especially designed for the piece.

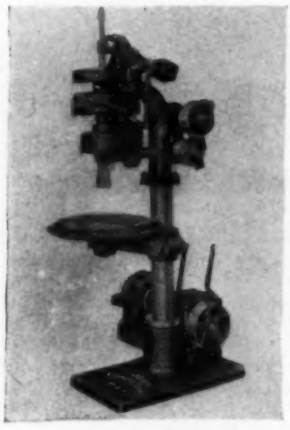
— 158 —

Tapping Machine, Heavy-Duty, Automatic, No. 3-B, "Garvin"

Western Machine Tool Works, Holland, Mich. [Vol.72,p.353]

Another Garvin, speedbox-equipped, automatic tapping machine, the No. 3-B heavy-duty type, has been placed on the market. The machine is designed particularly to take care of large size standard and pipe taps, and is the largest machine in this line. It is particularly adapted for use with multiple heads.

Specifications are: capacity, U.S.S. taps in cast iron, 1 to 1¾ in.; U.S.S. taps in steel, 1 to 1½ in.; pipe taps in cast iron, 1¼ in.; pipe tap in steel, 1 in.;



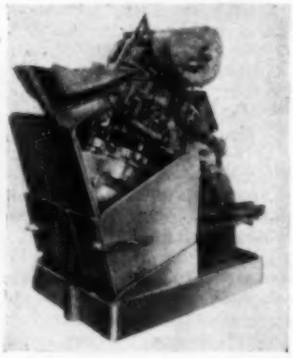
depth of hole tapped, up to 2½ in.; distance from center of spindle to column, 12½ in.; movement of spindle, 4 in.; vertical adjustment of table, 20 in.; floor space, 45 by 31 in.; weight, 1,175 pounds.

— 159 —

Threading and Forming Machine, Bolt, 1-Inch

Landis Machine Co., Waynesboro, Pa. [Vol.72,p.933]

Capacity of this machine ranges from ½ to 1 in. in diameter up to 6 in. in length, any length of thread up to 2½ in., and any style of point—cupped, flat, round dog-point, or full cone. The machine will give a full thread at the start,



an accurate lead, and a minimum amount of taper. It employs a special 1⅛-in. "Lanra" head of the pull-off type.

Hopper feed is employed. Length of the finished bolts is controlled by an adjustment of the transfer bracket. The time element for the return of the forming and threading head and the indexing of the turret chuck is constant, regardless of the diameter, pitch, length of thread, quality of material, or threading speed. An improved line of sockets and grips handles practically every type of bolt and screw, and short bolts may be threaded close up to the head.

The forming head is threaded for easy attachment to and removal from the spindle nose. Change gears of the pick-off type permit changes in the speed. Speeds from 20 to 50 ft. per min. can be obtained for any diameter.

Standard equipment includes an oscillating conveyor. The machine is furnished for either belt or motor drive.

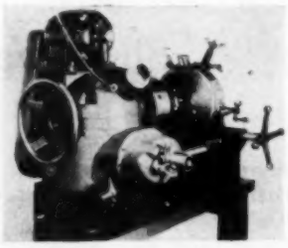
— 160 —

Threading Machine, Pipe, Bench-Type, Improved

The Oster Manufacturing Co., Cleveland, Ohio. [Vol.72, p.817]

All "Willie-Williams" portable power threaders are now equipped with "Domestic Electric" universal motors, formerly used only on the Oster "Power boy" threader.

Among the other features are



the built-in cutting-off, reaming, and chamfering tools, the built-in quick-opening diehead, the geared pump, and the two powerful chucks, one heavy gripping, the other self-centering.

Both the bench-type and pedestal-type machines will thread, cut, ream, and chamfer from ⅛- to 2-in. pipe.

— 161 —

Chuck, Friction, Large

The Apex Machine Co., Dayton, Ohio. [Vol.72,p.890]

A large size friction chuck having the same general design as previous models has been announced. Taps are held in the

chuck by means of a free-floating collet. Both tap and collet are driven by the square. Standard hand taps are used.

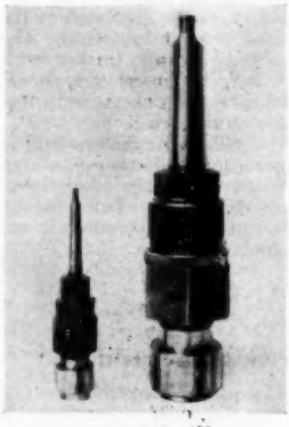
The body of the chuck is 5 in. in diameter by 7½ in. long, and is furnished with either a No. 5 or No. 6 Morse taper shank as standard or special shank on order. It is designed particularly for tapping large-size bottom holes in one operation, and for setting corresponding size studs and nuts on heavy machines, such as compressors, gas engines, and locomotives. The tap capacity is 1½ to 3 inches.

— 162 —

Chuck, Safety Drive, "Titan"

Titan Tool Co., Erie, Pa. [Vol.72,p.1043]

These chucks in sizes from ⅛ to 1¾ in. inclusive continue to feature the "Titan" differential nut principle for tension adjustment. Round, knurled differential adjustment nuts are provided on the smaller sizes



and hexagon differential adjustment nuts on the larger sizes for wrench tightening. Knurled lock nuts on the shank prevent plunging of the tool assembly and an additional lock nut for the differential adjusting nut prevents shifting of the adjustment after it has been set.

The tension members consist of internal and external steel cones designed for maximum driving surfaces. They are separated by a sheet fiber cone.

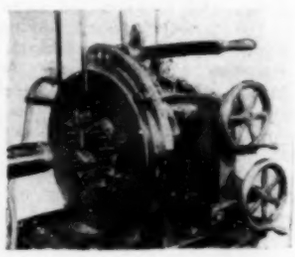
— 163 —

Cutters, Grooving, for "Victaulic" Joints

Landis Machine Co., Waynesboro, Pa. [Vol.72,p.932]

Cutters for grooving pipe and casing for "Victaulic" couplings have been developed for use on pipe threading and cutting machines. These cutters are placed in the regular chaser holders of the stationary pipe diehead.

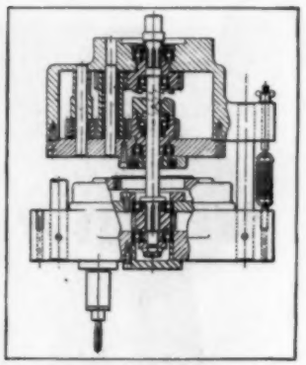
The distance from the end of the pipe to the groove is located by means of two stop blocks. The cutters are made of high speed steel. These cutters and stop blocks can be obtained for all sizes of pipe and casing ranging from 2½ to 20 in. in diameter.



— 164 —

Tapping Attachment, Universal, "Super"

Gray Hub Co., 3171 Bellevue Ave., Detroit, Mich. [Vol.72, p.320]



Adaptable to an ordinary drill press or one of the flanged-quill type, the "Super" universal tapping attachment is built so that it may be placed in any position on the quill of the machine. The device also is suitable for reversing a multiple-spindle tapping head attached thereto.

Four sizes of the tapping attachment are available. Ball and roller bearings are used throughout, and the design is compact and rigid. Reversing is effected by means of double clutches which are hardened and ground.

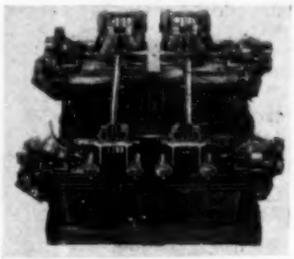
Welding Machines

— 165 —

Welding Machine, Flash, Universal, Four-Corner

Taylor-Winfield Corporation, 509 Mahoning Ave., N.W., Warren, Ohio. [Vol.72,p.201]

By assembling four individual flash welders on sub-bases movable on a common base, the above company has evolved a specialized design that may be employed for welding the four corners of square or rectangular metal frames, an example being automobile body door frames.



Each machine is separate and independent of the other machines in its operation, but all units are synchronized electrically to start, flash, upset and retract in unison.

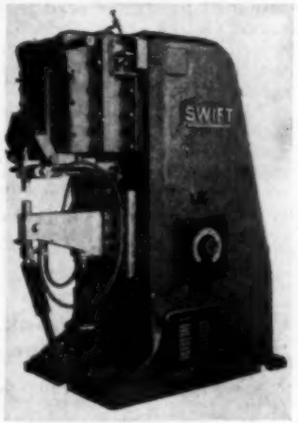
Clamping of the work in each unit is by means of air-operated clamping jaws, which apply pressure through a toggle. The jaws work in pairs and are controlled by air-valve switches at the side of the machine.

The clamping jaws are adjustable as to height and side elevation, and all working parts are easily accessible to the operator.

— 166 —

Welding Machine, Spot, Automatic, Heavy-Duty

Swift Electric Welder Co., Detroit, Mich. [Vol.72,p.822]



The upper head is operated from a cam and toggle driven through a worm and worm gear reduction. The lower horn may be adjusted to determine the opening between the electrodes, and both upper and lower electrodes and horns are water-cooled.

Sliding ways carry the upper horn or head, these ways having long bearing surfaces. They are adjustable by means of taper gibs. The frame is made of semi-steel and unit design and construction have been used wherever possible.

The cam furnishes a means for automatic current control, and the six-point regulator switch permits the determination of secondary voltages, and thus the regulation of heat for welding various sizes of stock.

The welder is built in three different sizes, 60, 100, and 150 kw.

— 167 —

Welding Machine, Wire-Wheel Automatic

Lincoln Electric Co., Coit Road and Kirby Ave., Cleveland, Ohio. [Vol.72,p.205]

An automatic machine for the manufacture of wire wheels by the carbon-arc welding process has been introduced. The purpose of this machine is to joint the pressed steel parts inside the hub as the wheel turns in a jig. The welding time for an 8-in. hub is 40 sec.

This automatic welding machine embodies the features

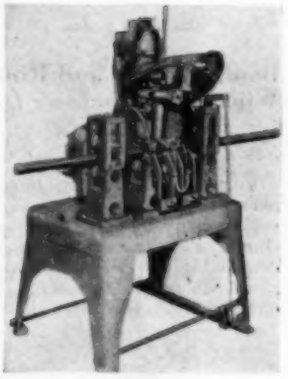
of the "Electronic Tornado" welder, manufactured by the above company. No metal filler rod is necessary. A smooth, well rounded bead is produced on the hub.

— 168 —

Welding Machine, Automatic, for Cross-Brake Shafts

Lincoln Electric Co., Coit Rd. & Kirby Ave., Cleveland, Ohio. [Vol.72,p.639]

The purpose of this automatic machine is to weld a longitudinal seam on shafts as they come from the press on which they are formed. The shafts are fabricated of ¼-in. plate and are formed into a tube 1¾ in. in diameter by 36 in. long. The edges of the strips are crimped to form a longitudinal raised seam, and these edges are fused together as they progress automatically under the arc at the rate of 36 in. per minute.

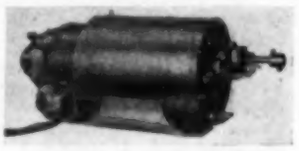


— 169 —

Reduction Units, Welding-Carriage

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.72,p.968]

A combined motor with three-speed reduction unit has been developed to drive work handling devices for automatic welding. With field control on the motor, an uninterrupted speed selection between 0.393 r.p.m. to 6.67 r.p.m. is obtainable at the final shaft.



The unit has been applied to a ½-hp., 1,140 r.p.m., 60-volt, d.c. motor in the 7-A SK frame.

Other Machines

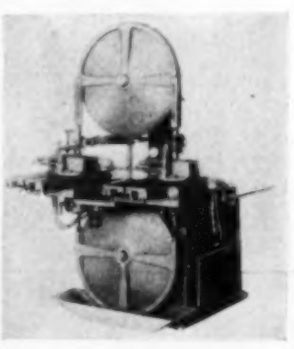
— 170 —

Bandsaw, Metal-Cutting, with Hydraulic Feed, Type CMT

William Laidlaw, Inc., Belmont, N. Y. [Vol.72,p.1041]

Low-pressure hydraulic feed, consisting of a small, rotary-type piston pump, oil reservoir, pressure-regulating valve, relief valve, pressure gage, cylinder, piston, control valve, and necessary piping, is used on this machine. Everything except the short, flexible, metallic hose connections to the cylinders is housed in the base.

Since the machine is of the double-cutting type, two cylinders are necessary. These stationary cylinders are mounted on the top of the tables beside the movable carriage, the piston rod being directly connected to the latter. Between the brass lining of the cylinders and the side walls is a chamber into which the oil is pumped from the reservoir through a ported rotary control valve. An adjustable stop is provided to close the control valve and stop the feed when the carriage has traveled a pre-determined distance. A position stop attached to the front vise jaw prevents the saw from cutting into the vise.

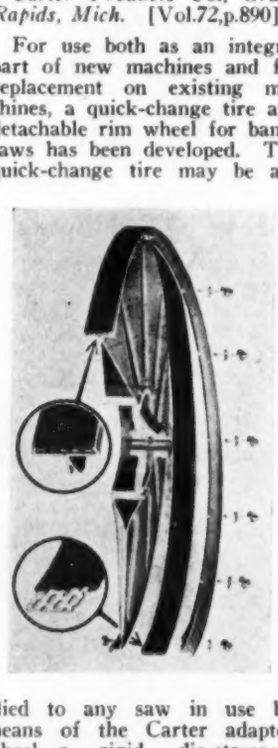


— 171 —

Bandsaw Tire and Rim Wheel, Detachable

Carter Products Co., Grand Rapids, Mich. [Vol.72,p.890]

For use both as an integral part of new machines and for replacement on existing machines, a quick-change tire and detachable rim wheel for bandsaws has been developed. The quick-change tire may be applied to any saw in use by means of the Carter adapter wheel—a rigid, die-stamped, double-disk, electric - welded unit embodying whatever make of wheel hub is necessary to fit the saw used.



— 172 —

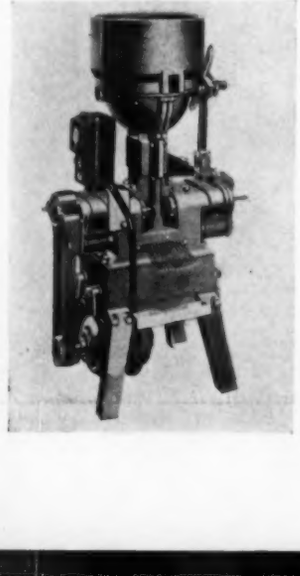
Countersinking Machine, Nut, Duplex

Kent Machine Co., Cuyahoga Falls, Ohio. [Vol.72,p.1046]

Both sides of square or hexagon nuts may be countersunk on this double automatic machine. Nuts are delivered automatically to the feeding chute from which they are fed to a position in line with the countersinking spindles.

A double feed hopper is employed. This hopper is adjustable for different sizes of nuts. Interchangeable feeding chutes are employed to meet varied requirements of diameter and height of product. Drive is from a motor located underneath the machine, by belt to the driving shaft. One cam shaft controls the entire cycle.

The machine is built in two sizes, $\frac{1}{2}$ and 1 in., for countersinking standard nuts to $\frac{1}{2}$ in. in diameter and from $\frac{5}{16}$ to 1 in. in diameter, respectively.



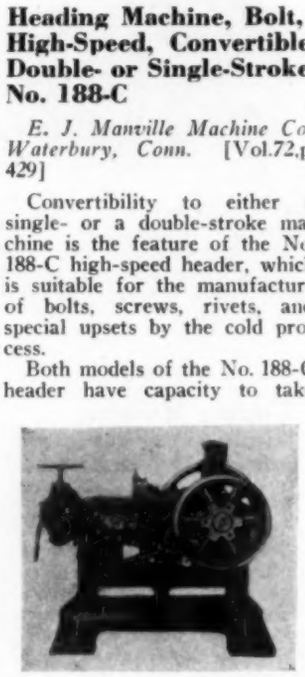
— 173 —

Heading Machine, Bolt, High-Speed, Convertible, Double- or Single-Stroke, No. 188-C

E. J. Manville Machine Co., Waterbury, Conn. [Vol.72,p.429]

Convertibility to either a single- or a double-stroke machine is the feature of the No. 188-C high-speed header, which is suitable for the manufacture of bolts, screws, rivets, and special upsets by the cold process.

Both models of the No. 188-C header have capacity to take



$\frac{5}{16}$-in. wire, the maximum length of the blank under the head being under $1\frac{1}{4}$ in. in both cases. The maximum length of the wire blank is $1\frac{3}{4}$ in. on the double stroke and $1\frac{1}{16}$ in. on the single-stroke unit. From 170 to 175 blanks per hour is the production of the double-stroke header and 250 the capacity of the single-stroke machine.

Motor drive may be furnished on order for this machine. A special foot brake may also be had.

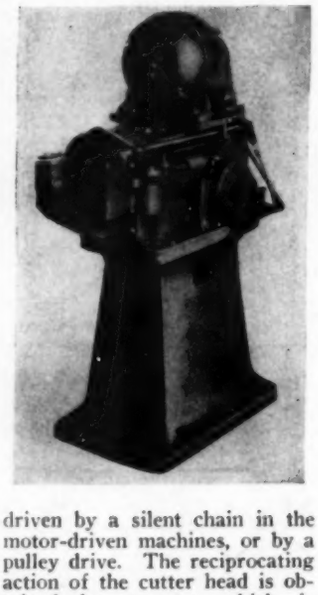
— 174 —

Pointing Machine, Bolt and Stud, 1-Inch

Kent Machine Co., Cuyahoga Falls, Ohio. [Vol.72,p.821]

A semi-automatic bolt, stud, and rod pointer has been placed on the market. The pointing head moves forward and back a predetermined number of times per minute and is built in two types. One type has an arrangement for holding the bolt to be pointed by the head, while the other type is provided with a double-jaw gripping attachment whereby round-head bolts, studs, or rods may be pointed.

The pointing head spindle is



driven by a silent chain in the motor-driven machines, or by a pulley drive. The reciprocating action of the cutter head is obtained by a cam, which is driven through gearing from the cutter spindle. All gearing contained within the body.

Although this machine is designed especially for pointing, it can be adapted to end drilling, shouldering, hollow milling, and other operations. The machine is built in bench or pedestal types.

— 175 —

Pointing Machine, Bolt, Semi-Automatic, Type P

Economy Engineering Co., Willoughby, Ohio. [Vol.72,p.973]

For pointing studs, bolts, or rods from $\frac{3}{4}$ to $\frac{3}{8}$ in. in diameter and $5\frac{1}{2}$ in. or more in length, the Type P semi-automatic pointing machine has been developed. Production ranges from 1,200 to 2,400 pieces per hour. Except for inserting and

removing the blanks every movement is automatic. The spindle is driven by a silent chain from the motor mounted in the base. For adapting the machine to different size bolts, it is necessary only to adjust the pointing head and gripping device.

Width, 23 in.; height, 41 in.; length, 34 in.; net weight, 1,400 lb., and motor, $2\frac{1}{2}$ hp.

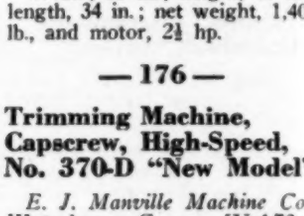
— 176 —

Trimming Machine, Capscrew, High-Speed, No. 370-D "New Model"

E. J. Manville Machine Co., Waterbury, Conn. [Vol.72,p.671]

Heads of capscrew blanks may be trimmed hex, square, or round at a rate of 125 blanks per minute with this machine.

This trimmer will handle $\frac{3}{8}$-, $\frac{7}{16}$-, and $\frac{1}{2}$-in. capscrews not exceeding $2\frac{1}{2}$ in. in length. The



machine is of the conventional horizontal type, and is constructed on a one-piece base. The reciprocating motion of the trimming ram has sufficient dwell to afford a knock-out or kicker mechanism sufficient time to eject the blank through the trimming die.

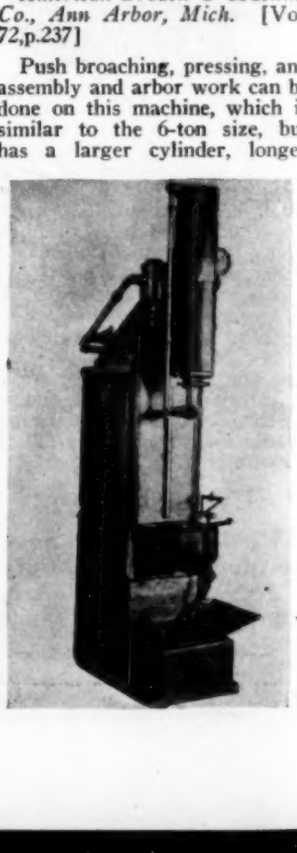
Motor drive is ordinarily furnished. The net weight of the machine is about 3,500 lb. and the floor space is 42 by 61 inches.

— 177 —

Broaching Press, 12-Ton, Type V-2

American Broach & Machine Co., Ann Arbor, Mich. [Vol. 72,p.237]

Push broaching, pressing, and assembly and arbor work can be done on this machine, which is similar to the 6-ton size, but has a larger cylinder, longer



stroke, and heavier pump. Maximum clearance between the table and the end of the ram is 26 in., and the stroke is of the same length. Work up to 15 in. in diameter can be accommodated, although the table is finished only 12 in. in diameter. Other specifications are: ram speed, 15 ft. per min.; lower end of the ram tapped 2 in., 8 threads per in., and table bore 3 in.

Floor space, 4 ft. 5½ ft., height of work table from floor, 36 in., motor recommended, 15 hp. at 1,800 r.p.m., and weight, 3,900 lb.

— 178 —

Flexible-Shaft Machine, "Supra"

Biax Flexible Shaft Co., Inc., 20 East 17th St., New York, N. Y. [Vol.72,p.279]

Two sizes of the "Supra" flexible-shaft machine have been developed. These units, ¼- and 1-hp. capacities, are suitable for production grinding, drum and disk sanding, snagging, filing, wire brushing, buffing, polishing, drilling, and other cutting and cleaning operations on ferrous

and non-ferrous metals, Bakelite, fiber, and rubber. Both units can be supplied in the overhead suspended type with either a saddle hook or a trolley for a monorail system.

Complete with a roller floor stand, the unit weighs 60 lb. The motor is furnished for 110- or 220-volt a.c. single-phase, 60 cycle circuits, or 220-volt d.c. or 220-volt, 3-phase, a.c. circuits.

— 179 —

Flexible-Shaft Machine, Type M5-A

N. A. Strand & Co., 5001 North Lincoln St., Chicago, Ill. [Vol.72,p.752]

Ball bearings are used on the motor, countershaft, and hand spindle of this machine, which is mounted on a tripod base with toolbox and swivel baseplate. Vertical adjustment up to 9 in. is provided. The speeds are

900, 1,800, and 3,600 r.p.m. Grinding wheels up to 5 in. in diameter and ¾ in. thickness are carried.

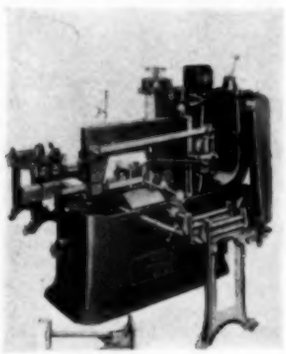
The flexible shaft machine is provided with a belt guard and a shaft holder. The flexible shaft is 5 ft. long. Either 110 or 220-volt, 60-cycle, single-phase a.c. or 110 or 220-volt d.c. models are furnished.

— 180 —

Hacksawing Machines, High-Speed, Nos. 6 and 6A, "Marvel"

Armstrong-Blum Manufacturing Co., 333 N. Francisco Ave., Chicago, Ill. [Vol.72,p.35]

Two models of "Marvel" high-speed hacksawing machines have been developed. Features are the ball-bearing saw frame slide and the combination posi-



tive and friction feeding mechanism.

A four-speed, automotive-type transmission gives four sawing speeds of 73, 93, 118, and 147 strokes per min. Hardened, high-carbon steel gears are used in the case, and the shafts are mounted on ball bearings. Drive is either by single pulley to a countershaft or by motor through a roller chain. A 1½-hp. motor is specified.

The No. 6 machine is a plain, single-cut unit. The No. 6A is similar in construction, but in addition is equipped with an automatic bar feed. On the other side of the machine is an adjustable stock stop. Work up to 6x6 in. can be cut in either machine.

Floor space, 3x5 ft., weight No. 6 model, 1,700 lb.; No. 6A, 1,900 pounds.

— 181 —

Hammer, Forging, Motor-Driven, No. 7-B

Nazel Engineering & Machine Works, Philadelphia, Pa. [Vol.72,p.504]

This hammer will work mild steel up to 10 in. square. The ram has a 32-in. stroke, and distance between the center of the ram to the housing is 30 in.

The anvil block weighs 21,000 lb. The diagonal forging position renders the dies accessible on all sides, and enables long bars to be worked in either direction across the anvil. Other features are the noiseless exhaust into the hammer frame, belted motor drive, and automatic force-feed lubrication.

Floor space, 158x68 in.; motor, 60 hp.; shipping weight, 58,300 pounds.

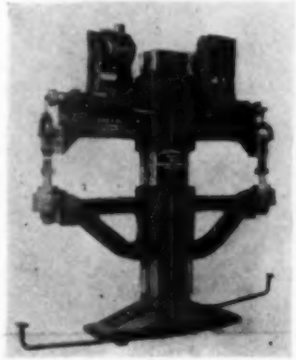
— 182 —

Hammer, Power, Duplex

Quickwork Co., St. Mary's, Ohio. [Vol.72,p.1005]

Intensity of the blow on the "Quickwork" twin power hammer can be increased or decreased in direct proportion to the amount of pressure exerted by the operator's foot.

The hammer is made in one size only. The weight is 6,130 lb. Direct-connected motor drive is supplied. One 2-hp. motor is mounted sturdily on



each arm. Belt drive is used because of the cushioning effect.

The lower die can be adjusted quickly upward or downward in relation to the upper die. The center column is machined on both the surfaces to which the power hammers are mounted, as well as the sides of the column. The brackets can be raised or lowered or spaced differently as the work requires.

Floor space, 7 ft. by 2 ft. 3 inches.

— 183 —

Hammer, Portable, Electric, "Stanley-Ajax"

The Stanley Electric Tool Co., New Britain, Conn. [Vol. 72,p.509]

This hammer is of light weight and is well balanced. A patented mechanism delivers powerful blows to the cutting tool without the transmission of shock to the motor, the housing, or the operator. Ball bearings are used throughout, and all parts of the mechanism are made from special alloy steels.

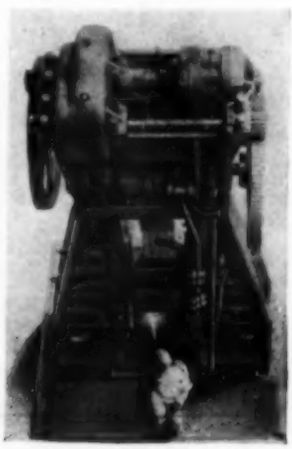
The Type 310 hammer weighs 10 lb., and has an over-all length of 16½ in. It delivers 2,500 blows per minute. The Type 320 is larger and weighs 22 lb. Both of these hammers can be supplied for 110-, 150-, 220-, and 250-volt circuits.

— 184 —

Head for Board Drop Hammers, Motor-Driven

Chambersburg Engineering Co., Chambersburg, Pa. [Vol. 72,p.200]

This motor-driven head for the Model H board drop hammer is identical with the belt-driven head, but it has a motor



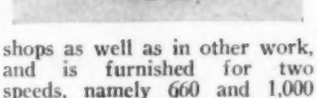
and driving assembly mounted on a bracket replacing the caps over the eccentric bearings. One motor only is required, and it is spring mounted and shielded from the heat of forging. Geared drive to the roll shafts permits uniform front and rear roll speeds and minimizes grinding of the boards.

— 185 —

Nut Driver, Right-Angle, No. 017-5, "Hercules"

Buckeye Portable Tool Co., Dayton, Ohio. [Vol.72,p.1048]

Close-quarter nut driving is a special feature of the No. 017-5 right-angle nut setter, which can be used in railroad



shops as well as in other work, and is furnished for two speeds, namely 660 and 1,000 r.p.m. It is intended for driving ½-in. nuts and ⅝-in. cap screws. The tool is 21 in. long and weighs 11¼ pounds.

— 186 —

Screwdriver, Electric, Type CBF-B

Ray Machine Co., 5403 West Lake St., Chicago, Ill. [Vol. 72,p.391]

A foot-controlled, bench-type electric screwdriver, known as the Type CBF-B has been placed on the market. The screwdriver unit was described on page 1024, Vol. 71, of the

American Machinist. It is operated on 110-volt current and is supplied for 60-cycle, single-phase circuits ordinarily.

This foot-controlled bench mounting has many uses in assembly operations. A cast-iron base is provided, which is attached to the top of the assembly bench or conveyor.

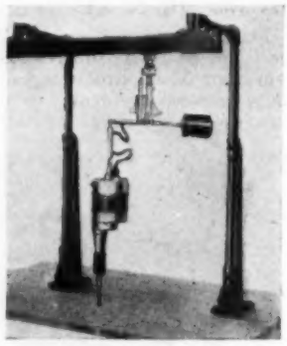
The screw-driving unit is secured to the vertical tubing support by means of a cast-aluminum bracket.

— 187 —

Screwdriver, Electric Type CST-B

Ray Machine Co., 5403 West Lake St., Chicago, Ill. [Vol. 72,p.504]

The features of the screw-driving unit itself are the same as those described on page 1024, Vol. 71, of the *American Machinist.* This mounting is designed especially to facilitate driving screws and nuts over



an extended area, such as in assembly work that is constantly moving or where the location of the parts being assembled is continually changing.

Rubber stops for limiting the vertical movement of the horizontal supporting arm and a dampening device are included in the telescoping bracket.

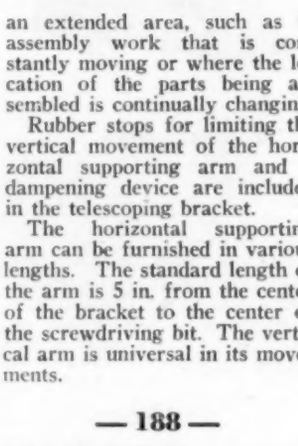
The horizontal supporting arm can be furnished in various lengths. The standard length of the arm is 5 in. from the center of the bracket to the center of the screwdriving bit. The vertical arm is universal in its movements.

— 188 —

Riveting Machine

Marquette Tool & Manufacturing Co., 6491 West 65th St., Chicago, Ill. [Vol.72,p.676]

Equipped with a hydro-pneumatic die cushion, this unusual riveting machine allows automatically for variations in thickness of the parts, and pro-



vides necessary pressure to expand fully and head the rivets under all ordinary operating conditions. The die cushion yields, however, when oversize parts cause excessive pressure, which might otherwise result in crystallization of the metal in the rivet, straining of the press, or breaking of the crankshaft. If the work is undersize, the cushion rises and applies pressure. Where desired, it is possible to incorporate a special means for cutting out the cushion. Off-center riveting can be done without the danger of spoiling the work or damaging the machine.

— 189 —

Rolling Machine, Type B

McKinney Tool & Manufacturing Co., 1688 Arabella Road, Cleveland, Ohio. [Vol.72,p.387]

Roll forming of strip and sheet metal can be done rapidly on the Type "B" roller die forming machine, available in two sizes, known as the Nos. 1-B and 2-B. The first will roll up to 18 gage and the second up to 14 gage.

The main housings are grooved to the bed and doweled in place. The front housings slide from front to rear on guide strips doweled to the bed. A cut-off-saw may be attached.

Specifications for the No. 1-B machine: number of work spindles, 2 to 14; diameter of work spindles, 1¾ in.; widest sheet rolled, 10 in.; distance between stands, 8 in.; speed, ft. per min., 100 to 200. Specifications of the No. 2-B machine: number of work spindles, 2 to 12; diameter of work spindles, 2¼ in.; widest sheet rolled, 14 in.; distance between stands, 16 in.; speed, ft. per min., 75 to 150.

— 190 —

Rolling Machine, Universal, Type C

McKinney Tool & Manufacturing Co., 1688 Arabella Road, Cleveland, Ohio. [Vol.72,p.389]

Heavier construction and greater capacity than found in the Type B machine (Item 189) are embodied in universal Type C units, made in three sizes to roll 16, 14, and 10-gage metal. Unit construction is employed. Each unit carries two pairs of work spindles and the parts of

one unit are interchangeable with like parts in another.

Sliding front housings are employed. Regardless of whether a wide or narrow section is being rolled, the housing is placed against the work roll to give support.

The top spindles have an up-and-down adjustment of 5 in. with the gears in mesh.

The three sizes are known as the Nos. 1-C, 2-C, and 3-C, with from 2 to 20 work spindles having diameters as follows: 2, 2½, and 3 in. The widest sheets rolled are 12, 16, and 20 in. Distances between stands, 17, 17, and 19 in., respectively.

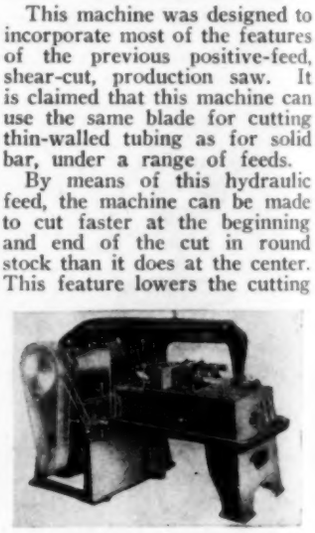
— 191 —

Sawing Machine, Hydraulic

Racine Tool & Machine Co., Racine, Wis. [Vol.72,p.744]

This machine was designed to incorporate most of the features of the previous positive-feed, shear-cut, production saw. It is claimed that this machine can use the same blade for cutting thin-walled tubing as for solid bar, under a range of feeds.

By means of this hydraulic feed, the machine can be made to cut faster at the beginning and end of the cut in round stock than it does at the center. This feature lowers the cutting



time. Also, it is claimed that the blade life is longer because the lift on the non-cutting stroke is accomplished in a better manner. The machine has a capacity of 9x9 in. in solid stock.

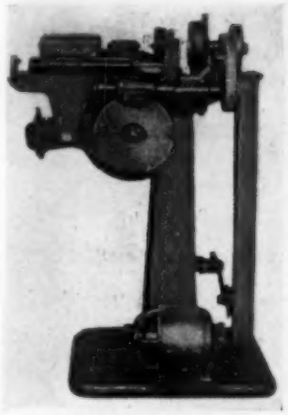
— 192 —

Swaging Machine, Taper-Pin, Automatic

Langelier Manufacturing Co., Providence, R. I. [Vol.72,p.318]

Small taper pins are swaged by an entirely automatic process on this machine. It takes 0.020-to $\frac{1}{8}$-in. wire from the coil, straightens it, swages the taper, and cuts off pins up to ½ in. long at the rate of 35 per min. The small end of the pins can be rounded. Other machines can be made to take larger wire and swage longer pins.

The machine consists of a frame attached to the top of a pedestal base, one small swag-



ing head being mounted on the end of the frame. The remainder of the frame has a dovetail slide on the top face, upon which the shearing, feeding, and straightening heads are reciprocated by a double cam.

Floor space, 2 by 3 ft.; weight, approximately 900 pounds.

— 193 —

Swaging Machine, Spoke

Langelier Manufacturing Co., Providence, R. I. [Vol.72,p.430]

Automobile wire wheel spokes can be swaged directly from a coil of wire on this automatic machine, which feeds the wire continuously from the coil, passes it through a rotary wire-straightening head, thence into the rear end of the swaging spindle, and finally up to the dies, where the reduced part of the spoke is swaged. After each spoke is swaged, it is

sheared off to its proper length. Wire up to ½ in. in diameter is taken and spokes may be swaged up to 10 in. in length.

The machine consists of one of the company's No. 4 open die swaging heads mounted on one end of a long box bed.

Drive is afforded by a two-pulley countershaft, one pulley driving the swaging machine spindle and the other driving the two-speed pulleys for the feeding mechanism. The wire straightener is driven by a separate countershaft.

Floor space, 44x101 inches.

— 194 —

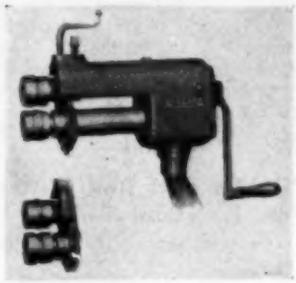
Beading Machine, No. 193

Niagara Machine & Tool Works, Buffalo, N. Y. [Vol. 72,p.509]

Beading operations on sheet metal up to 22-gage can be performed on this device, which has a throat depth of 8¼ in. The rolls are 2¾ in. in diameter, and the length 1¾ in. A sturdy, one-piece, inclosed frame affords safety for the operator.

The upper shaft is raised and lowered by means of a quick-acting crank screw. All bearings are large and provision is made for easy lubrication. Rolls are of case-hardened steel. A polished face gage with large gaging surface is furnished.

The No. 193 beader is offered complete with one pair of ¾-in. O.G. beading rolls, one pair of ⅝ in. single bearing rolls, a



bench standard, and a wrench. Single beading rolls ⅝ in., ¾ in., or ½ in. in diameter, straight crimping rolls, and spiral crimping rolls can be furnished extra.

Shipping weight, 90 pounds.

— 195 —

Bending and Straightening Machine

Thomas Spacing Machine Co., Pittsburgh, Pa. [Vol.72,p.431]

Structural shapes of all types can be straightened or bent on this machine, which is built in 150- and 300-ton sizes and features a frame of built-up structural steel, all parts taking thrusts being riveted and welded. The gears are of machine-cut steel, the camshaft is an open-hearth steel forging, and the ram and bolster blocks

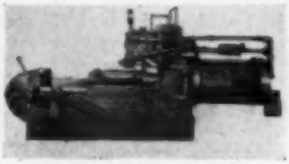
are of steel. With a slight adjustment of the wedges, it is possible to obtain almost any desired bend in structural shapes within the capacity of the machine.

— 196 —

Bulldozer, 75-Ton

American Broach & Machine Co., Ann Arbor, Mich. [Vol. 72,p.73]

Especially designed for track assembly work, this 75-ton bulldozer is mounted on a base having roller bearings, so that the entire machine has an opportunity to float, making it self-centering. The machine permits of progressive assembly on a fixed straight line, with resulting economy.



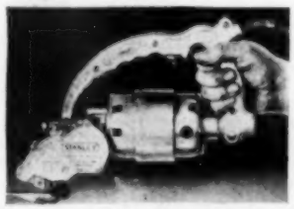
Jaws are 24 in. wide and 6 in. deep. A floating vise carries the motor and pump mounted on a plate connected to the cylinder. The ram has a forward speed of 8 ft. per min., and a return speed of 11 ft. per min. Weight, complete with sub-base, 12,000 pounds.

— 197 —

Cutting Machines, Sheet-Metal, "Stanley-Unishear"

Stanley Electric Tool Co., New Britain, Conn. [Vol.72,p. 711]

The above concern has purchased the trade name, stock, tools, jigs, fixtures, etc., of the Unishear Co., 270 Lafayette St., New York City, and will continue the manufacture and development of these machines. One of the items taken over is the "Mighty Midget," which will take to 18 U. S. gage sheet iron and can be used to cut sheet steel, aluminum, copper,



and fiber. This device weighs 6½ lb. and will cut to a minimum radius of 1 in. It will cut straight lines and curves or notches at a speed of 15 ft. per min., and leaves no burr nor distortion of the metal.

Besides the "Mighty Midget," there are several other models of semi-portable and stationary machines equipped to cut irregular shapes in various metals up to ¼ in. in thickness.

— 198 —

Cutting-Off Machine, Type C, "Radiac"

A. P. de Sanno & Sons, Philadelphia, Pa. [Vol.72,p.819]

The material cut includes both cold-rolled and high-speed steel, tempered and hardened drill rod, chrome-molybdenum and manganese steel, chilled cast, and stainless iron and alloyed aluminum. It is claimed that solid stock up to 2 in. in diameter can be cut so quickly that the heat generated is not sufficient to draw the carbon or temper. The average time of cutting 1 in. of square stock is about four-fifths of a second.

The spindle speed is 5,000 r.p.m., and a 12-in. wheel is

employed. The ball-bearing wheel spindle revolves and is multiple-belt-driven by a 7½-hp. motor.

Angle cuts up to 45 deg. may be made. At an additional cost, a turn table can be furnished for holding flat stock, not exceeding 2¼ in. wide.

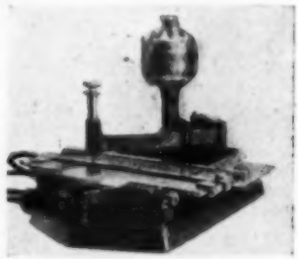
Weight, 1,200 lb., floor space, 45x27x57 in.

— 199 —

Engraving Machine

Simplex Tool Co., Woonsocket, R. I. [Vol.72,p.859]

For the marking of flat gages, name plates, and the engraving of serial numbers on panels made of soft steel, brass, aluminum, hard rubber, or bakelite, this engraving machine will



take pieces up to 14 in. in height and of any width by ¾ in. in thickness. Practically no set-up is required. Engraving is done by means of a pantograph. The engraved letters are approximately one-third the size of the master letters on the table. The tracing point moves in and out of its socket as pressure is applied or released by hand in tracing. The space engraved at one time is approximately 3x1 inch.

— 200 —

Filing Machine, Die, Rotary

Rausch Manufacturing Co., Racine, Wis. [Vol.72,p.708]

Large savings over hand filing can be made with this rotary die filing machine on such work as: blanking, forming, and

irregular shaped dies; templets and sheet metal parts; irregular shaped gages; cams and formers for profiling; filing master templets for engraving machines; filing radii on dies, fitting punches to dies; making metal patterns, and other operations.

Among the adjustments provided are: tilting of the work table horizontally either side, to obtain the exact degree of die clearance, and the motor and table can be reversed so that the file can be extended through the table, thus giving the operator a clear vision of the line. Adjustment is also provided for raising and lowering the motor, so that the file in the chuck can be adjusted to the work in process.

— 201 —

Gouger, Square-Billet

Putnam Machine Works, Division of Manning, Maxwell & Moore, Inc., Fitchburg, Mass. [Vol.72,p.544]

To permit stripping square billets on a production basis, the square billet gouger has been designed. This machine is of the planer type and has hydraulic operation, but is so designed that the cutting tool may be made to follow the camber of the billet. In consequence, the billet is cleaned without removing too much material at any

point. Billets up to 6 in. square and in lengths of 10 ft. have been handled.

Among the features are: hydraulic operation, a massive cutter head and the roll over. The billet is clamped on a table actuated by a hydraulic drive and traversed from left to right. This table can be operated at any cutting speed up to 30 ft. per min. with a return speed of approximately 50 ft. per min. The travel of the table is controlled by a walking-beam treadle under the operator's feet.

The cutting tool is held in a massive head and is moved in and out of the cut and across the face of the billet. Two controllers in front of the operator's seat operate motors mounted on the tool head. Each of these motors is of 3 hp. and runs at 1,200 rev. per minute.

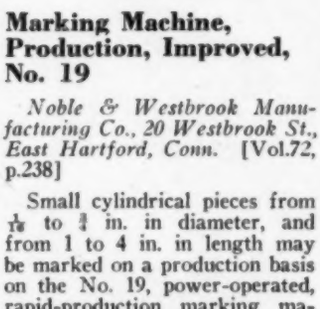
— 202 —

Marking Machine, Production, Improved, No. 19

Noble & Westbrook Manufacturing Co., 20 Westbrook St., East Hartford, Conn. [Vol.72, p.238]

Small cylindrical pieces from $\frac{1}{16}$ to $\frac{3}{4}$ in. in diameter, and from 1 to 4 in. in length may be marked on a production basis on the No. 19, power-operated, rapid-production marking machine. The machine is complete with the motor drive.

Straight shank drills, taps,



and similar articles are examples of work that can be marked. A loading platform is provided with an inclined surface to bring the work to the marking dial. A pick-up dial is also provided for small size work.

Production of 100 to 150 pieces per hour can be obtained.

— 203 —

Molding Machines, Electric, Types A-1 and E-1

Terkelsen Machine Co., Terkelsen Bldg., 326 A St., Boston, Mass. [Vol.72,p.507]

In the Type A-1, the ram is actuated by a toggle. This model is particularly suited to the general service molding of synthetic compositions. The other, Type E-1, has a ram in both sides of which a rack is cut. This machine is especially designed to be used by unskilled

labor and is manipulated by a push button.

The Type A-1 is fitted with automatic ejectors, enabling the operator to remove the pieces and refill the mold with minimum loss of time. Semi-automatic operation insures protection to the mold against careless handling. It can be used also as a manually operated press.

The Type E-1 machine may be employed for any kind of synthetic compound in any form and is easy and economical to operate. No power is consumed during the follow-up or curing process, at which period the spring-loaded accumulator assumes the load. The machine is noiseless in operation and will stop at any desired position.

— 204 —

Nibbler and Rod Cutter, No. 4, "Handnib"

National Machine Tool Co., Racine, Wis. [Vol.72,p.546]

This tool will shear and nibble $\frac{1}{16}$-in. flat stock into any shape desired. It takes care of inside nibbling of various designs in sheet metal of the same capacity, and will also cut drill rod of cold rolled steel and any round stock to $\frac{1}{4}$ in.

The body of the No. 4 "Handnib" is made of cast steel, and all wearing parts are hardened and ground. Three models are manufactured: the first is for

outside nibbling, inside nibbling and shearing, and rod cutting; the second is for outside nibbling, inside nibbling, and shearing, and the third is for shearing only.

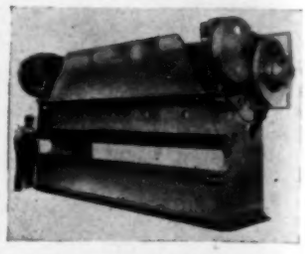
— 205 —

Press Brake, 16-Ft.

Cincinnati Shaper Co., Elam St. & Gerard Ave., Cincinnati, Ohio. [Vol.72,p.893]

Over-all die surface of 16 ft. and distance of 14 ft. 6 in. between the housings are specifications. Main members are of steel plate and the machine has a capacity to form right angles 16 ft. long in $\frac{3}{16}$-in. steel over $1\frac{1}{2}$-in. die to a $\frac{3}{16}$-in. inside radius.

Roller or ball bearings are used throughout between the load carrying members. All



loads are transmitted directly up to the center line of both housings, eliminating distortion from eccentric loads.

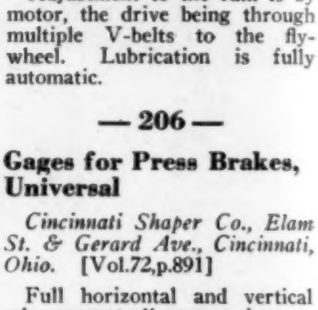
Adjustment to the ram is by motor, the drive being through multiple V-belts to the flywheel. Lubrication is fully automatic.

— 206 —

Gages for Press Brakes, Universal

Cincinnati Shaper Co., Elam St. & Gerard Ave., Cincinnati, Ohio. [Vol.72,p.891]

Full horizontal and vertical micrometer adjustment is supplied on these universal gages for press brakes. They may be used either on the front or rear



of the press brake. The gages can be set for forming wide and narrow sheets either upward or downward, and also as adjustable two-step gages for making both bends of a channel successively with only one handling of the sheet.

The gages are marketed two to a set with a wrench.

— 207 —

Roll, Wrapping

Buffalo Forge Co., P. O. Box 985, Buffalo, N. Y. [Vol.72, p.352]

For forming metal cylinders of diameters from 5 to 30 in. and depths from $2\frac{1}{2}$ to 20 in., wrapping rolls in three sizes

have been developed. These cylinders may be rolled from metal ranging in thickness from ⅛ to 1 in. Not only may plain cylinders be produced, but special flanged shapes are easily handled.

Each cylinder diameter requires a separate master roll, but aside from this all changes are made by means of the twin-screw adjustment at the top. The quick-acting work release makes it possible to remove completed cylinders without disturbing the setting of the rolls.

Guide fingers assure proper alignment of the material when feeding. The machine has bronze bushings, Alemite lubrication, and an armor-plate frame. The weights range from 1,350 to 5,000 pounds.

— 208 —

Shape Cutter, Automatic, Medium-Size, "Geweco"

General Welding & Equipment Co., 70 Lansdowne St., Boston, Mass. [Vol.72,p.676]

This machine has a rectangular cutting range 2 ft. wide by 4 ft. long and is intended

for general machine and welding shops. The machine comprises a pivoted double-arm system jointed together for parallel movement and mounted on a carriage able to move longitudinally on a rail track. The jointed, pivoted arms produce a transverse movement at right angle to the path of the carriage. In this way any point in the plane can be covered. The front bar carries the drive and tracer and the extension of this bar carries the torch.

In order to work closely at sharp turns and corners, the whole driving and tracing system is mounted on a floating turntable. The machine is balanced by conveniently located weights, and the length of operation can be increased by lengthening the table and rails.

Either city gas or acetylene may be used with oxygen.

Gaging and Testing Equipment

— 209 —

Gear Checking Machine, Model B, "National-Cleveland"

National Tool Co., Madison Ave. at 112th St., Cleveland, Ohio. [Vol.72,p.434]

Improvements on the Model B gear checking machine permit readings to 0.0001 in. with a one-to-one lever arm mounted on ball bearings. Ball bearings are also used on the work

spindle and the base circle disks.

In addition to checking involute tooth forms, the machine has been found adaptable to checking the concentricity of the involute curved tooth with the bore of the cutter, by checking through an arc of 180 deg. The machine is also arranged to check the spacing of the teeth. It is made in 4-, 6-, and 8-in. sizes.

— 210 —

Tap Lead, Tester, "Mikrotast"

Coats Machine Tool Co., Inc., 110-112 West 40th St., New York, N. Y. [Vol.72,p.204]

For checking the lead of taps, the test bench illustrated has been introduced into the United States. This test bench is used in connection with a special

"Mikrotast" fixture, which by itself can be employed for testing the lead of thread gages. The master tap is held between centers and the "Mikrotast" lead testing fixture is placed in position so that the square bars at the back of the fixture square up with the slideable flats shown back of the "Mikrotast" indicator. The contact jaw on the right is equipped with micrometer adjustment, and the contact jaw on the left operates the indicator. By setting the hand of the indicator on the zero mark and setting the red plus and minus tolerance markers, taps can be checked easily with a master tap for inaccuracies. The test bench is of German manufacture.

— 211 —

Hardness Tester, Brinell, Portable

Industrial Apparatus & Instrument Co., 239 Springfield Ave., Newark, N. J. [Vol.72, p.1009]

A portable Brinell hardness tester weighing approximately 22 lb. is being marketed by the above concern. This instrument is manufactured in Germany by Mohr & Federstaff.

and is particularly useful on testing heavy or inaccessible parts. The tester consists of a yoke of steel for receiving and measuring the forces exerted and a load producer, which can be adjusted to act in opposite directions. The hardness tester is fastened upon the test piece in the manner of an ordinary screw clamp.

— 212 —

Hardness Indicator with Large Table, "Monotron"

Shore Instrument & Manufacturing Co., Jamaica, N. Y. [Vol.72,p.1050]

The 18-in. vertical "Monotron" Model C hardness indicator may be supplied with a large table 12x20 in., for testing large work, and especially work that has to be moved about to test different parts. The offset supporting arm is adjustable up and down, according to the size of the work,

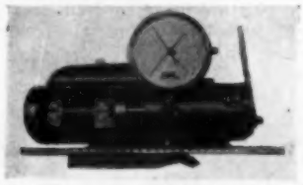
and can be locked. The handwheel used for operating the machine can be adjusted in any radial position relative to a pivotal boss, on which it may be clamped, for the purpose of giving the work the necessary clearance, or to promote convenience of operation on small pieces.

— 213 —

Testing Machine for Welds, Portable, "Oxweld"

Southwark Foundry & Machine Co., Philadelphia, Pa. [Vol.72,p.858]

This machine is known as the "Oxweld" portable testing machine, and has been developed in collaboration with the Union



Carbide & Carbon Research Laboratories, but is built by the above concern. It is a self-contained unit.

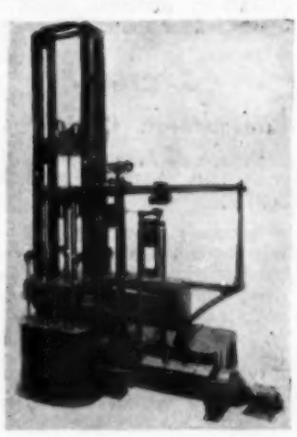
A hand-operated piston-type pump is located in the end of the cylinder. The total load is indicated directly on an Emery dial. The wedge grips are manipulated by the fingers. The maximum diameter of the device is 6¾ in., and the over-all length is 28 in., the stroke being 7 in. The weight is 165 lb., and the capacity is for loads up to 40,000 pounds. Transverse and compression test may be made.

— 214 —

Testing Machines, Cables and Wire

Tinius Olsen Testing Machine Co., 500 North 12th St., Philadelphia, Pa. [Vol.72,p.75]

A cable testing machine and a wire testing machine have been developed. The first of these is of the company's standard universal type, but it involves a number of improvements over earlier models, and was developed especially for steel cable testing. It is fitted with a change-speed gearbox drive, which permits the selection of eight different speeds, and starts, stops, and reverses by means of clutches. A "tell-tale" interconnected with the gear-box shows which gears are in mesh.



Gears are shifted by means of four levers.

Movement of the head is indicated directly on a graduated dial. Combined movements develop an automatic, autographic, stress-strain diagram. The maximum capacity is 400,000 pounds.

The second and smaller of the two machines is known as a standard wire testing machine. It is fitted with a two-lever, four-speed gearbox control, in which the drive to each gear is through small metal-to-metal disk clutches.

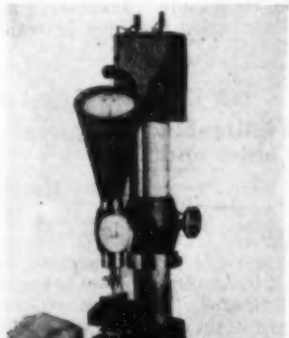
— 215 —

Wire Tester, "Mikrotast"

Coats Machine Tool Co., Inc., 110-112 West 40th St., New York, N. Y. [Vol.72,p.201]

Fine wire may be tested accurately and without exerting pressure upon it by means of the wire tester illustrated. It is of Krupp design.

The fixture is particularly useful where wire would be deformed under pressure of the micrometer screws, or where it cannot be gaged accurately because the end measuring flats of such screws are not sufficiently



parallel. The supporting anvil is insulated and connected with a dry cell placed on top of the upright column. The other terminal leads to red light bulb located directly over the "Mikrotast" scale. The instrument shown has a range of fifty 0.00005-in. divisions, equal to 0.0025 in. for the entire range.

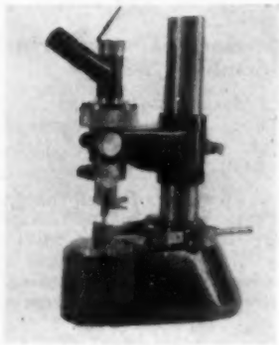
— 216 —

Comparator, Optical

Bausch & Lomb Optical Co., Rochester, N. Y. [Vol.72,p.508]

Accuracy to within 0.00005 in. is embodied in the optical comparator for comparison and measuring purposes on parts with flat surfaces, balls, or cylinders. The instrument is built into a strong steel casing.

The optical comparator is supplied in two models, the first of which has an eye-piece which



is inclined 60 deg. to the measuring axis, and the other with a 90-deg. eyepiece. It is also possible to supply an instrument with a projection attachment.

The range of the calibrated scale is plus or minus 0.004 in. Objects up to 6 in. in height can be compared.

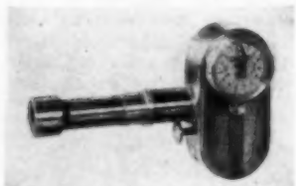
— 217 —

Comparator, Model AR, "Comtorplug"

The Comtor Co., Waltham, Mass. [Vol.72,p.892]

This plug-gage type of comparator consists of one amplifier and a number of interchangeable expansion plugs and reference standards, one for each size of hole. The measuring end of the expansion plug is ground straight and cylindrical while it is contracted to its smallest size. At the working size, it is slightly oblong in cross-section, and slightly back-tapered. It is suited to reaching to the bottom of a hole or counterbore, thus being effective for exploring out-of-round, taper, and bell-mouth conditions, or in measuring between flat surfaces.

The Model AR shown has a



special large dial graduated in ten thousandths, to eliminate eye-strain in continuous use.

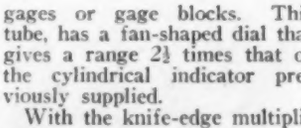
— 218 —

Micro-Indicator Tube, "Societe Genevoise"

R. Y. Ferner Co., Investment Building, Washington, D. C. [Vol.72,p.239]

The above company, agent for Societe Genevoise D' Instruments De Physique, Geneva, Switzerland, is placing on the market a micro-indicator tube for use with the various types of supports supplied for the accurate checking of parts by comparison with standard gages or gage blocks. This tube, has a fan-shaped dial that gives a range 2½ times that of the cylindrical indicator previously supplied.

With the knife-edge multiplication system adjusted to a 400:1 ratio, two scales are used, one having 60 divisions, each representing 0.0001 inch, or a total range of 0.006 inch, and the other scale having 30 divisions twice as wide as the



above. With a multiplication of 120:1, a third scale is provided having 40 divisions, each of which represents 0.0005 inch and gives a total range of 0.002 inch. Two tolerance indexes, colored red, are adjustably mounted in a slot in the dial.

— 219 —

Micro-Indicator Stand, "Societe Genevoise"

R. Y. Ferner Co., Investment Building, Washington, D. C. [Vol.72,p.706]

A stand to make use of the micro-indicator tube, described under item No. 218, is being manufactured by the Societe Genevoise d'Instruments de Physique, Geneva, Switzerland. By its use the micro-indicator tube can be converted to a comparator.

The base and column of the stand are of very heavy construction, the total weight being 48 lb. The table for supporting the pieces tested is 5x7 in., and is made flat within 0.0001 in. This table is provided with six T slots, which serve for securing two angle plates in any position or a V-block for the support of cylindrical pieces. The micro-indicator itself is supported in a heavy arm secured to the column by a strong clamp. The axis of the indicator is 3¾ in. from the column.

It is possible to measure flat pieces as large as 12 in. in width. The vertical capacity of the apparatus is 6 in. when using a spherical contact point.

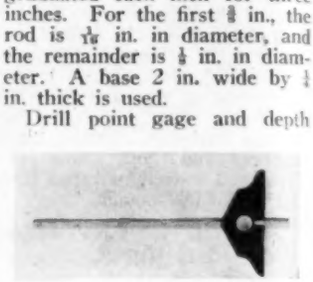
— 220 —

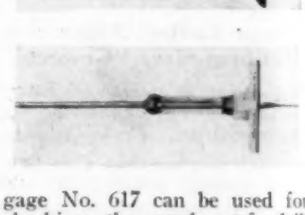
Gages, Depth, Nos. 614 and 617

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.37]

Graduated rod depth gage No. 614 measures the depth of large or small holes from 0 to 3 in., directly in 64ths. The rod is graduated each inch for three inches. For the first ¾ in., the rod is $\frac{1}{16}$ in. in diameter, and the remainder is ¼ in. in diameter. A base 2 in. wide by ¼ in. thick is used.

Drill point gage and depth





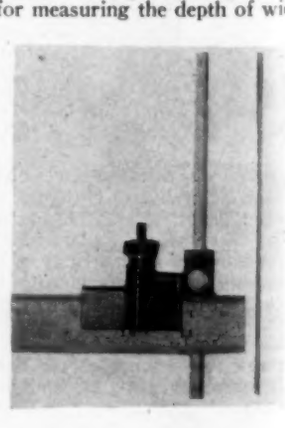
gage No. 617 can be used for checking the angles of drill points in grinding, and to determine whether the point is central. It may also be used as a depth gage for finding the depths of holes as small as $\frac{3}{64}$ of an inch in diameter. The graduated bevels on the head are ground to an included angle of 59 deg. The 6-in. rule is graduated in 32nds and 64ths, and a 6-in. rod $\frac{3}{64}$ in. in diameter is furnished for use in measuring the depth of small holes. The No. 617 has a range of 0 to 5 inches.

— 221 —

Gage Attachment, Depth, No. 468

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.390]

A combination square or set may be converted into a depth gage by the use of the No. 468 depth gage attachment. This attachment measures directly from the lower edge of the blade, and is particularly useful for measuring the depth of wide



recesses. The frame is drop forged and japanned.

The English measure attachment has a range of 0 to 4½ in. with a 6-in. blade graduated in 32nds and 64ths, or 64ths and 100ths. A blade with 32nd and 64th graduations is furnished unless otherwise specified. The metric measure attachment has a range from zero to 114 mm., with a 15-cm. blade graduated in mm. and 0.5 mm.

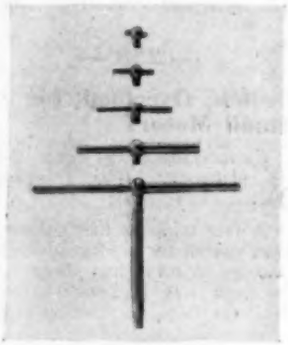
The No. 468 depth gage attachment may be used on 9-, 12-, and 24-in. combination squares and sets.

— 222 —

Gages, Telescoping, No. 590

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.390]

For determining difficult internal measurements, the No. 590 telescoping gages are for use with micrometers. These gages comprise five heads which are interchangeable on one han-



dle. The telescoping head is compressed and inserted into the hole or slot to be measured where it expands to the exact size of the hole. A turn of a knurled screw on the end of the handle locks the head and the gage is then removed and measured with a micrometer.

Each head is a self-contained unit. Measuring surfaces of the heads are ground on the radius of the smallest hole the gage will enter, thus adapting them especially for measuring curved surfaces. The ends of heads are hardened.

— 223 —

Gages, Railway-Car-Wheel, Nos. 728 B & C

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.675]

The first of these gages, No. 728B, is known as the maximum flange thickness gage for cast-iron wheels. It is made of tool steel, accurately machined and hardened. The gage goes down over the flange with the leg flat on the tread, if the wheel is of correct size.

The second gage, the No.

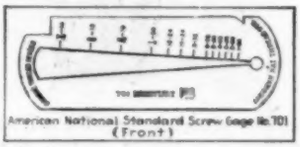
728C, is known as the standard mounting and check gage for cast-iron and cast-steel wheels. If the wheels are mounted correctly, the back of one flange and the face of the other flange come in contact with the gaging faces. Both of these gages conform to A.R.A. standards.

— 224 —

Gage, Screw, No. 701

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.72,p.677]

A handy gage for determining screw threads according to the American National (and U. S.) screw thread standards has been placed on the market. One side of the gage is graduated for the fine thread series



and the other side for the coarse thread series.

— 225 —

Gages, Radius

Lufkin Rule Co., Saginaw, Mich. [Vol.72,p.896]

These gates are now available up to ½ in. radius. The additional sizes are from $\frac{9}{32}$ to ½ in. radius by 32nds. Each gage is a separate unit. This

permits it to be conveniently and accurately applied to the work. Internal and external forms are on the same piece.

The gages are regularly furnished in sets in leatherette folders.

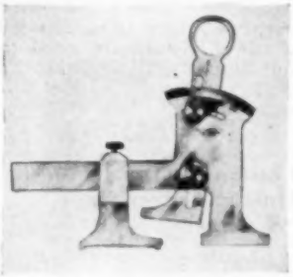
— 226 —

Gage, Cutter-Clearance, No. 459

L. S. Starrett Co., Athol, Mass. [Vol.72,p.934]

Determination of clearances on all types of milling cutters from ¼ to 30 in. or more in diameter can be effected. This gage gives precise readings in degrees on all types of cutters, and is adaptable to end, side, helix, spiral, or inserted-tooth cutters.

The gage consists of a tool-steel beam, fitted with one stationary foot with its contact edge parallel with the beam; a



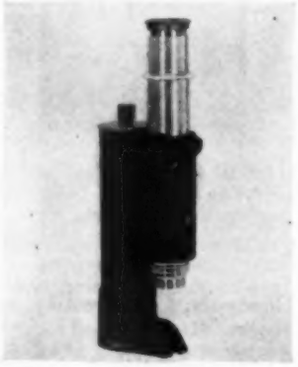
slidably mounted foot, also parallel with the beam, and an upright blade, which is adjustable both perpendicularly and angularly.

— 227 —

Microscope, Shop, No. 32

Bausch & Lomb Optical Co., Rochester, N. Y. [Vol.72,p.749]

For the rapid inspection of surfaces for quality, texture, cracks, or flaws, particularly in the shop, a No. 32 microscope



has been placed on the market. This instrument is small, portable, and inexpensive. The eyepiece is calibrated in thousandths. This instrument magnifies 40 times and has a field of $\frac{7}{32}$ inch. Brinell impressions may be measured.

— 228 —

Stroboscope, Ashdown "Rotoscope"

Livingston & Southard, Inc., 17 Battery Place, N. Y. [Vol. 72,p.971]

The Ashdown "Rotoscope," is distributed in the United States by the above concern. It is an instrument operating on the stroboscopic principle. Motions, whether rotary, oscillatory, vibratory or reciprocating, can be observed and studied, and the exact speed of the moving object can be determined without physical contact. Slow motion study and exact timing at any speed from 100 to 40,000 move-

ments per minute can be accomplished.

The chief feature of the Rotoscope is the rotary cylindrical shutter. The speed of this shutter can be varied by rapid adjustments.

The instrument is compact and light, weighing only 6 lb. With it the observer is able to make readings without the aid of special illumination. It is operated by clock work.

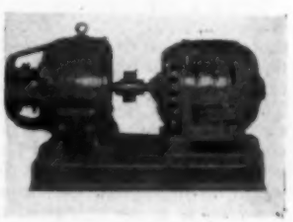
Electrical Equipment

— 229 —

Motor-Generator Sets, with Welded Steel Bases

Reliance Electric & Engineering Co., Ivanhoe Road, Cleveland, Ohio. [Vol.72,p.317]

Heavy steel-plate bases, electrically welded together, are now standard on the motor-generator sets manufactured by the above concern. Tops and ends of the welded base are completely closed so that no dirt can collect underneath. Pads upon which the motor and generator rest are lined up horizontally and vertically by using the machines themselves as patterns for doing the aligning. Such shims as are needed are placed between the pads and the base. One or both units may be removed from the base without the alignment being disturbed. Horizontal alignment is maintained by the use of tight-fitting dowels.



— 230 —

Motors, Fan-Cooled, Totally Inclosed

Century Electric Co., 1806 Pine St., St. Louis, Mo. [Vol. 72,p.542]

The inclosed, fan-cooled, squirrel-cage, induction motors have the same dimensions as standard open-style motors, but they have the added advantages of full protection to the stator,

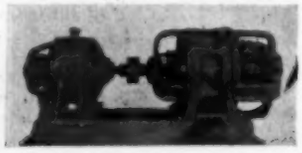
rotor, and other internal parts. The fan and fan housing are mounted externally on the front end of the motor. Air passages are unobstructed. They may be blown out readily. The fan blades are radial, which makes them equally effective in either direction of rotation.

— 231 —

Converters, Frequency

Reliance Electric & Engineering Co., 1042-1090 Ivanhoe Road, Cleveland, Ohio. [Vol. 72,p.894]

These machines are built for operation on either two-phase or three-phase current. They provide an economical method of obtaining single-phase, two-phase, or three-phase current at



any low frequency, such as three to fifteen cycles.

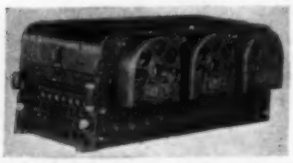
These converters have been used to obtain variations in speed with squirrel-cage induction motors, and to get speeds which are either higher or lower than can be obtained from induction motors operating on a standard frequency.

— 232 —

Controller for Low Head Cranes

General Electric Co., Schenectady, N. Y. [Vol.72,p.36]

This is a self-contained, triple-drum controller with a resistor mounted on the back for the floor operation of the three motions of small, low-head cranes. The general construction is similar to that of other crane controllers of the standard General Electric line, with the rope wheel having spring return, and the vertical or horizontal handle



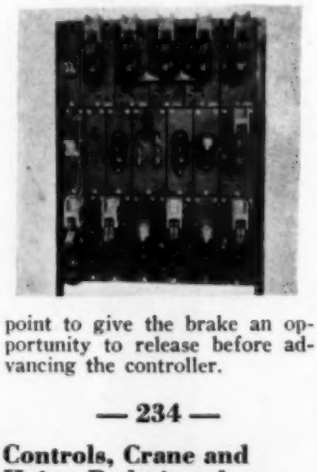
made interchangeable. In a cab installation, the resistor can be separated from the drum switches, which is necessary if all three motors are rated the full 10-hp. rating of the controllers.

— 233 —

Controller for Crane Hoists, Lowering, "Wright"

Electric Controller & Manufacturing Co., 2700 East 79th St., Cleveland, Ohio. [Vol.72, p.282]

A magnetic contactor type of crane hoist controller has been placed on the market. According to the manufacturer, the solenoid brake release is not sluggish in the lowering direction, and, therefore, it is not necessary to pause on the first



point to give the brake an opportunity to release before advancing the controller.

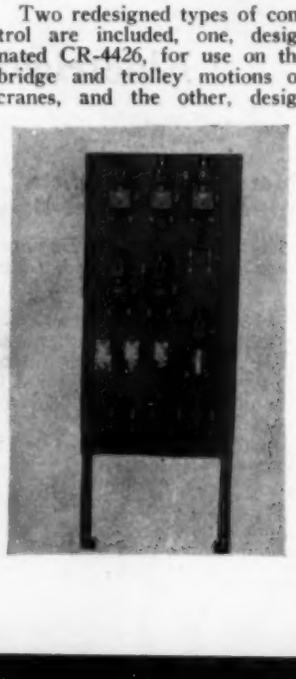
— 234 —

Controls, Crane and Hoist, Redesigned

General Electric Co., Schenectady, N. Y. [Vol.72,p.390]

Two redesigned types of control are included, one, designated CR-4426, for use on the bridge and trolley motions of cranes, and the other, designated CR-4422, for use on hoist motions. Each type is available in two forms, with and without overload protection. On both forms the circuit breaker contactor has been replaced by a line contactor.

A three-point, cam-operated master switch is used with the control. Overload relays are also incorporated.



— 235 —

Starters, Across-the-Line

Condit Electrical Manufacturing Corporation, Boston, Mass. [Vol.72,p.471]

The standard a.c., across-the-line, air-motor starters are now equipped with hand-operated motor circuit switches. For

further security, both the starter and motor circuit switch will open at the same overload. Both are housed together in a sturdy safety case.

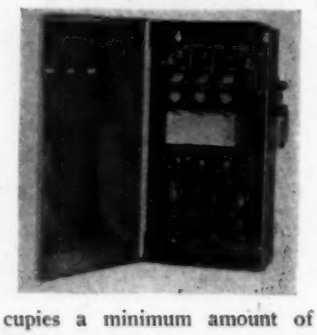
The starters are furnished up to 20 hp. for 550- and 440-volt circuits, to 10 hp. for 220-volt circuits, and to 5 hp. for 110-volt circuits.

— 236 —

Line-Starter and Safety Switch, Combination

Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa. [Vol.72,p.636]

A combination linestarter and safety switch, designated as Class 11-200-HD, has been developed. This apparatus oc-



cupies a minimum amount of space.

A feature is the provision for inserting a plug-type meter test jack to determine the load on the machine while the motor is in operation, and while the door of the cabinet is closed. The equipment can be used with or without fuses. The safety switch has quick make-and-brake contacts, and the handle is interlocked with the cover.

— 237 —

Starter, Air Motor, Type A-15

Condit Electrical Manufacturing Corporation, Boston, Mass. [Vol.72,p.638]

Arc prevention is the feature of the Type A-15 air motor starter. The contacts are assembled in units on insulated carrier bases, one stationary and

the other movable. The movable contact base can be withdrawn without the use of tools.

The Type A-15 air motor starter is furnished for 7½ hp. at 550 and 440 volts, 5 hp. at 220 volts, and 3 hp. at 110 volts.

— 238 —

Switch, Overload, for Small Motors

Cutler-Hammer, Inc., 2-12 St., Milwaukee, Wis. [Vol.72,p. 392]

A free-tripping thermal overload switch for fractional-horsepower motors has been announced. It is known as the Bulletin 9101. According to the

manufacturer, the switch provides positive protection against motor burnouts. The switch has ratings up to ¾ hp., 110- and 220-volts a.c., and ½ hp., 115-volts d.c.

— 239 —

Switch, Starting Single-Phase, Bulletin 707

Allen-Bradley Co., 286 Greenfield Ave., Milwaukee, Wis. [Vol.72,p.548]

For motors operating pumps, compressors and other equipment by either two-wire or three-wire control, a Bulletin

707, single-phase starting switch has been developed. This switch is a double-pole magnetic type with a thermal overload relay, and has a maximum rating of 1½ hp. at 110 volts or 3 hp. at 220 volts. A feature is the operating coil, which has a double winding for series-parallel connections, permitting the switch to be used interchangeably up to and including 1½ hp. for 110- or 220-volt motors. It can be furnished with stop and start push buttons in the cover, without push buttons, and with a two-way lever switch.

— 240 —

Switch, Master, Type N. T.

Electric Controller & Manufacturing Co., 2700 E. 79th St., Cleveland, Ohio. [Vol.72,p.639]

Intended for use on cranes, hoists, and other applications where speed control from a master switch is desired, the Type N T has refinements to insure smooth and easy operation. These include: the use of

ball bearings, the short throw of the operating handles, the absence of gears, and the fact that the contact fingers always ride on uninterrupted plane surfaces.

The width of this master switch has been kept as small as possible, in order that several can be mounted in a crane cage or operator's pulpit. The switch can be mounted in the upright or inverted position.

The Type N T Master Switch is built to give a maximum of six points of speed control of each direction.

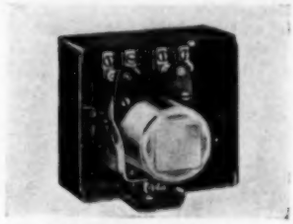
— 241 —

Switch, Pressure, Automatic, Bulletin 830

Allen-Bradley Co., 286 Greenfield Ave., Milwaukee, Wis. [Vol.72,p.673]

Built for starting and stopping compressors and pump motors, this Bulletin 830 pressure switch is about the size of a small outlet box.

The Size B pressure switch is made in four forms in various combinations with or without overload breakers, disconnect switches, and fuse clips. This unit is rated at 1 hp. on 110-220 volts d.c., and 1 hp. at 110 volts,



and 2 hp. at 220 volts, on a.c. circuits.

The Size C switch is rated up to 5 hp. For larger ratings, the Size B pressure switch is used as a pilot control for magnetic starters.

— 242 —

Switch, Reversing, Magnetic, Improved

General Electric Co., Schenectady, N. Y. [Vol.72,p.747]

This magnetic reversing switch is known as CR-7009-B-18 and supersedes the Model B-5 switch. It also has greater capacity.

The improved switch is designed to throw small a.c. motors directly across the line. It consists of two triple-pole, mechanically interlocked, magnetically operated contactors with restricted type blowouts, and with a normally open interlock on each contactor. It also has two hand-reset temperature

overload relays. The contactors are mounted side by side.

The device is contained in a drawn-shell steel case. It is available for voltages from 110 to 600, and for control of 7½ to 15 hp. on 3- or 2-phase, 3- or 4-wire systems, and from 3 to 10 hp. on single-phase circuits.

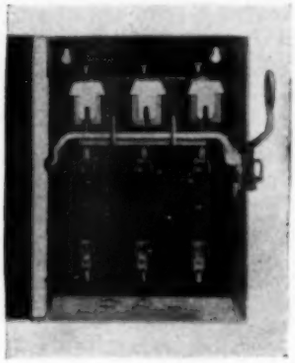
— 243 —

Switches, Safety, Type Wk-97

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.72,p.974]

Compact design has been achieved in the line of quick-make and quick-break Type "C" safety switches designated as the Type WK-97. This compactness has been achieved without the sacrifice of ample wiring room or sufficient voltage spacings. The line incorporates the "De-ion" arc quencher on the 575-volt sizes.

In addition to these features, the crank bearings are dustproof with grease packing; knockouts are pressed back into



the box to decrease the infiltration of dirt and excessive moisture; the bases are of Monson slate; and lock-on and lock-off brackets are provided.

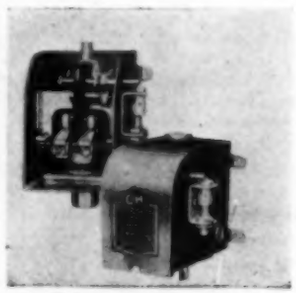
— 244 —

Regulator, Pressure, Small

Cutler-Hammer, Inc., 2-12th St., Milwaukee, Wis. [Vol.72, p.752]

This single-pole pressure regulator exceptionally small in size and designated as Bulletin 11,006, can be used as a starting switch for motors up to 1 hp., 230 volts, a.c. or d.c., or as a pilot switch in the control circuit of automatic starters for larger motors. The regulator closes the circuit at low pressure and opens the circuit at high pressure. It can be adjusted to open the circuit at any pressure from 30 to 200 pounds, and can be used for maintaining pressure on fluid systems.

The inclosing case is black japanned and metal working parts are cadmium plated.



Double-break silver contacts prevent pitting and insure good contact. The diaphragm is of rubber. Height, 6¼ inches.

— 245 —

Relay, Photo-Electric

General Electric Co., Schenectady, N. Y. [Vol.72,p.751]

The relay is essentially a vacuum tube device, and uses both the photo-electric tube and the pliotron.

A machine that travels in a certain direction for a certain distance, and is then stopped or reversed, is a typical application. When the traveling mechanism reaches its limit,

it interrupts a beam of light falling on the photo-electric tube and thus causes the control device to function.

The relay bears the designation CR-7505-A-1. The following advantages result from its use: (1) operates without shock, (2) can provide remote control, (3) adjustable in sensitivity, (4) easily installed, and operation is easily adjusted or changed, and, (5) can be operated 100 times a minute.

The standard electric supply for the relay is 110 to 120 volts, 60 cycles, alternating current.

Furnaces

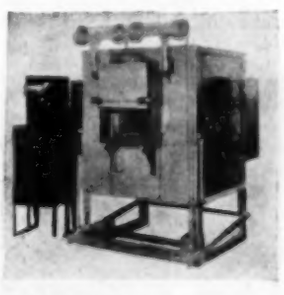
— 246 —

Furnace, Electric, High-Temperature, Type TOU

Bellevue Industrial Furnace Co., 2971 Bellevue Ave., Detroit, Mich. [Vol.72,p.239]

Various hearth sizes and capacities can be obtained in this high-temperature electric furnace, which is of the over-and-underfired design, with "Globar" elements mounted transversely in the top of the heat chamber and underneath the hearth. The latter is of silicon-carbide.

This furnace is particularly suited for heating flat pieces where heat penetration from the top to the bottom is preferable to side heat. The unit illus-



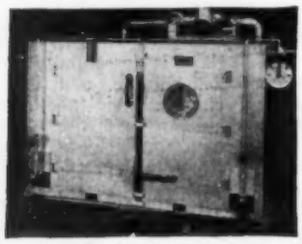
trated has an effective hearth of 12x16 in. and a rated capacity of 25 kw. Automatic temperature control instruments are mounted in a dust-proof cabinet.

— 247 —

Ovens, Japanning and Enameling, Indirect-Gas-Fired

Despatch Oven Co., 622 Ninth St., S.E., Minneapolis, Minn. [Vol.72,p.432]

One of the principal improvements in these indirect gas-fired ovens is the use of a square-tube radiator of larger surface and increased efficiency. Lower gas consumption is ef-



fected and better finished products are produced.

Atmospheric bar burners are mounted on the interior of the radiators, which are provided with control and mixing valves to secure proper combustion. To the top of the radiator is connected a small, electric motor-driven exhaust fan, which provides a constant draft through the radiator at all times. A special ventilating system is provided which takes heavy vapors out of the oven at the bottom and removes lighter vapors at the top.

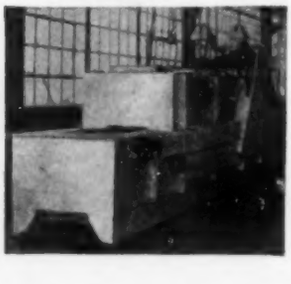
Ample insulation is also a feature, usually 4 in. of solidified rockwool insulation being provided. These ovens are designed to meet requirements.

— 248 —

Furnace, Conveyor, Floating-Belt-Type

Hevi Duty Electric Co., 4100 Highland Ave., Milwaukee, Wis. [Vol.72,p.547]

Heat-treating conditions are maintained constantly in the floating-belt-type, conveyor furnace. Automatic charging and recovery of the parts may be provided for. The heat economy is high because of the heavy insulation and inclosed return of the conveyor belt. The con-



veyor is supported on driven rollers throughout, and is not dragged across the hearth. It consists of a woven wire mesh belt of heat-resisting nickel-chromium alloy wire of $\frac{3}{16}$ mesh.

The bottom heating elements radiate directly through the mesh conveyor to the work. A relatively small chamber is required for a given rate of production, since a hearth area of only $1\frac{1}{2}$ by 12 ft. can heat 1,000 lb. of small parts an hour to a temperature of 1,550 deg. F. The limits of belt travel are from 3 to 12 in. per minute. Loading densities as high as 30 lb. per sq.ft. have been found practicable. The furnace may be had in five standard sizes with production rates of 250 to 1,400 lb. per hour.

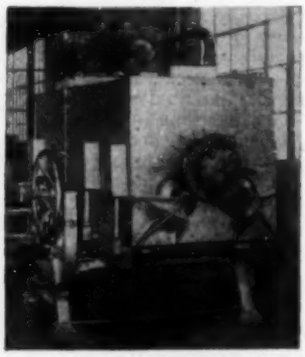
Quench tanks can be furnished in either single or double types. The latter is used where both oil and water quenches are needed.

— 249 —

Furnace, Pressure Carburizing, Rotary-Retort

Hevi Duty Electric Co., 4100 Highland Ave., Milwaukee, Wis. [Vol.72,p.749]

This furnace for pressure carburizing is of the rotary retort type and has been licensed under U. S. patents by the American Gas Furnace Company, Elizabeth, N. J. The furnace illustrated is of the 600 lb. size. Sizes are also furnished up to 1,200-lb. capacity. They are sturdily constructed, having a reinforced and insulated steel shell mounted on steel legs with an operating mechanism that permits tilting the unit backward and forward



to facilitate charging and discharging.

Heating elements are mounted on all four sides of the furnace chamber, and are of the round-rod, nickel-chromium type.

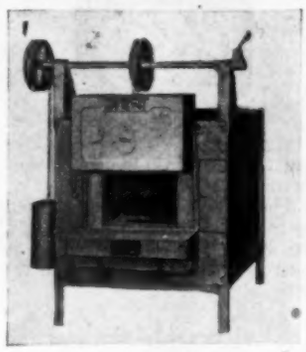
"Pyrofax" gas under pressure is normally used, and is cracked into hydrocarbons and absorbed by the steel charge. Artificial and natural gas, as well as carburizing compound, may be used as readily. Penetration of $\frac{1}{16}$ in. in $5\frac{1}{2}$ hours takes place at 1,675 deg. F.

— 250 —

Furnaces, Electric, for Small Parts

Harold E. Trent Co., Philadelphia, Pa. [Vol.72,p.858]

For the shop, laboratory, or technical school with heat-treating requirements that do not warrant the purchase of furnaces of the heavy-duty type, there has been developed



a line of small furnaces of which the main difference between them and the larger types is in lighter mechanical construction.

Simple design is one of the features of these furnaces. A pin on the door casting engages a bar that slopes in toward the furnace front about half-way down from the opening. The doors are counterbalanced so that they may be operated by a short lever. Heating elements of the strip type continuously folded and formed are employed.

At 1,850 deg. F., the 8x6x12-in. size uses 4.5 kw. at 110 volts on three-phase or 220 volts, single-phase.

— 251 —

Babbitt Pot, Electric, with Spout

Harold E. Trent Co., Philadelphia, Pa. [Vol.72,p.888]

Pouring of large bearings on heavy machinery is simplified by the use of the electric babbitt pot with a spout valve mechanism. This pot has been equipped with a handwheel which will permit the pouring of 400 lb. in less than one minute in a steady stream. All parts of the control mechanism are entirely outside of the melting chamber, leaving the latter

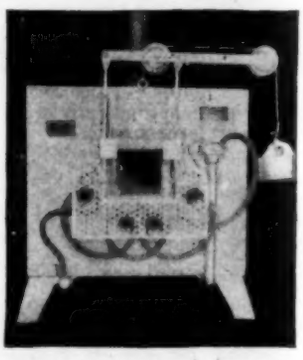
free from all obstacles to easy stirring and cleaning up after a melt. Attached to the pot housing is an automatic temperature controller.

— 252 —

Furnace, Toolroom, for Brazing Tungsten-Carbide Bits

Bellevue Industrial Furnace Co., 2971 Bellevue Ave., Detroit, Mich. [Vol.72,p.897]

Brazing of tools, particularly tungsten-carbide bits, can be done in the furnace illustrated. Turbulent gases are eliminated and the borax employed for brazing remains on the tools.



"Globar" heating elements are used.

The unit shown, Type "LSU," has an effective hearth 6 in. wide x 12 in. deep and a connected load of 14 kw. It gives a maximum temperature of 2,450 deg. F. Bench- and floor-type units are available.

— 253 —

Furnaces, Casehardening, Automatic

Hyro Manufacturing Co., Inc., 200 Varick St., New York, N. Y. [Vol.72,p.929]

All danger of the operator being burned by boiling liquids and overcome by fumes is eliminated by the automatic operation. One man can operate two or more furnaces.

Among the features are the following: required temperatures are obtained easily and

quickly; solutions cannot drip on floor; quality is uniform and output increased; the carrying mechanism is completely inclosed so that work cannot come in contact with cold air, and the life of the pot is increased in consequence; less floor space is required, and no special department need be set up.

The furnace and tank are self-contained, each being cov-

ered by a hood. Both these hoods are joined together. The carrying mechanism moves in a semi-circle within the hoods and sealed passageway.

The furnace is provided with an exhaust blower.

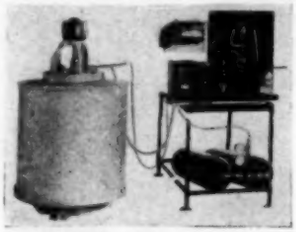
Specifications: capacity, lb. per load, 10 to 225; floor space required, 48x100 to 84x168 in., and approximate weights, net, 1900 to 6,200 pounds.

— 254 —

Furnace, Nitriding, Type-MU-500-N

Hevi Duty Electric Co., 4100 Highland Ave., Milwaukee, Wis. [Vol.72,p.1010]

For production of limited quantities, the Type MU-500-N small nitriding electric furnace of the forced circulation type follows closely in design the largest production furnaces. A centrifugal fan is supported by the cover for the rapid circulation of the gases in the furnace. Ammonia is introduced to the charge through the cover.



An alloy basket 8 in. in diameter by 20 in. deep is employed. The furnace has an electrical input of 3.5 kw. at 220 or 110 volts and automatic temperature control.

Material Handling Equipment

— 255 —

Lift Truck, "Red-Junior"

Barrett-Cravens Co., 1328 W. Monroe St., Chicago, Ill. [Vol. 72,p.389]

Easier lifting and faster operation are claimed for the "Red Junior" lift truck. This truck will lift a load with a single stroke of the handle from any angle. Its features include:

spring handle hold-up; roller bearing latch catch, and an automatic engaging latch for lifting loads. Hyatt roller bearings and Alemite lubrication are other features. The truck has a capacity of 2,500 pounds.

— 256 —

Lift Truck, Tin-Plate, "Blue Streak"

Yale & Towne Manufacturing Co., Stuebing Division, Cincinnati, Ohio. [Vol.72,p. 638]

A lift truck for handling tin plate loaded on skids or stringers has been developed. This truck has been found useful in handling loads up to 2,500 lb. The two parallel frames in the rear can easily be pushed beneath the three stringers supporting the tin plate, and then by a single forward motion of

the steering handle, the load is elevated 1⅛ in. All of the wheels are equipped with ball bearings.

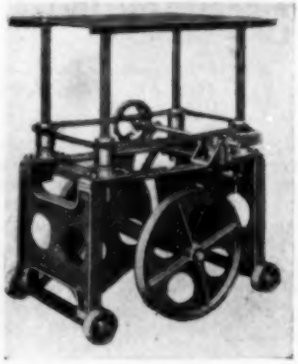
— 257 —

Truck, Elevating, Die

David Leckie, 2231 Stewart St., Philadelphia, Pa. [Vol.72, p.472]

Heavy dies and other parts can be transported and lifted into and out of machines with the aid of this elevating truck. The truck is built in eight sizes and the lifting capacities range from 1,000 lb. to 15 tons. In the model illustrated, the table can be raised to 37 in. and can be operated by means of a hand-wheel from either side.

The screws are operated by



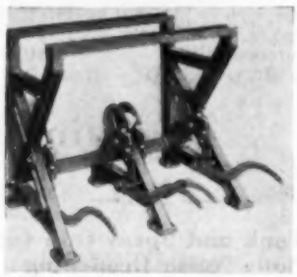
roller chains, and ball bearing thrust collars take up thrust. The center wheels are mounted on roller bearings, which facilitate movement of the truck.

— 258 —

Reel Lifter and Stand, Toggle-Type

Elwood Electric Co., Bridgeport, Conn. [Vol.72,p.1050]

Convenient and rapid use of wire and punch press stock on reels is effected by this combined toggle-type reel lifter and stand, available in various forms. The illustration shows the construction of the toggle mechanism common to all



models. When desired, suitable gearing may be added to wind up stock on the reel, or a friction band may be had to keep the stock taut while feeding. A reel stand mounted on a lift truck is also available.

— 259 —

Hoists, Electric

Robbins & Myers, Inc., Hoist and Crane Division, Springfield, Ohio. [Vol.72,p.32]

This line of electric hoists, the sizes ranging from ½ to 7½ tons, follows a design resulting in savings in weight and space in all dimensions, headroom included. A feature is the cast-steel trolley, which is adjustable to nine sizes of I-beams.

The main frame used in these

electric hoists is made of "Aremite" alloy. An aluminum finish is applied throughout. Hoists are accessible in all parts. Two stages of speed reduction by spur gearing are employed. Hyatt roller bearings are furnished.

All gears are of alloy steel, heat-treated, and the motor pinion is hobbed directly in the short motor shaft extension.

— 260 —

Hoist, "Pullift"

W. N. Matthews Corporation, Forest Park Blvd., St. Louis, Mo. [Vol.72,p.673]

This one-man hoist, the "Pullift," has a capacity of 5,000 lb. Any length of chain can be used. It is said 1,000 lb. can be lifted

at the rate of 16 in. per min. and heavier loads proportionately.

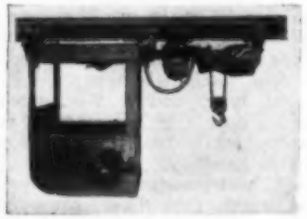
A magazine provides a safe means of keeping the free end of the chain from coming into accidental contact with machinery hoisted. The Pullift has a takeup of 5 ft. when the magazine is not used.

— 261 —

Trolley, Motor-Driven

Louden Machinery Co., Fairfield, Iowa. [Vol.72,p.896]

Handling material, particularly in straight line manufacture, is the function of this motor-driven trolley. Rope, push-button, remote, or dispatch controls are available. The cab



is inclosed, open, or furnished with a step-on platform. All gears are inclosed, and moving parts that do not run in oil are reached by high-pressure lubrication of the Alemite type. All rotating parts run on ball bearings.

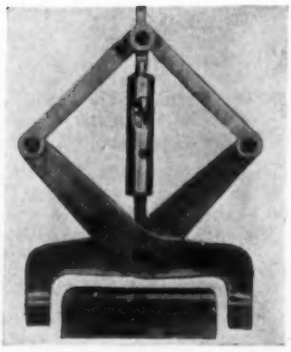
Capacity, 4,000 pounds.

— 262 —

Tongs, Safety, Automatic, "Gellert"

Heppenstall Forge & Knife Co., Pittsburgh, Pa. [Vol.72,p. 34]

"Gellert" automatic safety tongs may be suspended from any kind of a hoist and manipu-



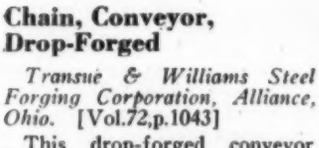
lated by means of a rope by the craneman. Their use, therefore, saves the services of ground men, as well as doing away with the hazards they engender. The tongs are suitable for lifting various kinds of metals, hot or cold, bulk goods, such as bales and hard paper rolls, barrels, kegs, and wire coils. All tongs are made to handle more or less standard-size articles. Special forms have been developed.

— 263 —

Chain, Conveyor, Drop-Forged

Transue & Williams Steel Forging Corporation, Alliance, Ohio. [Vol.72,p.1043]

This drop-forged conveyor chain of standard construction is rivetless and easily assembled. The pintles are claimed to be practically as strong as the links and to be interchangeable. Five weights per ft. are available, ranging from 3.11 to 16



lb. per lineal foot. The range of sizes is: a 4-in. pitch light type; a 4-in. pitch heavy type; a 6-in. pitch light type; a 9-in. light type, and a 9-in. pitch heavy-duty type. The chain is assembled in 10 ft. strands for easy handling. Special acid- and heat-resistant metals may be used for these conveyor chains.

The "Light Service" rivetless conveyor chain in the 4-in. pitch type has a weight of 2.2 lb. per ft., and a permissible radius travel of 3 ft. The construction also affords free movement of pintles. Tensile strength is approximately 14,000 lb., whereas that of the standard chain of the same size is 30,000 pounds.

— 264 —

Boxes, Stacking, "A-S-E"

All-Steel Equip. Co., Aurora, Ill. [Vol.72,p.897]

Stacking boxes are stacked on a slant base, and a spacer placed on the stacking rim on the front of each box permits

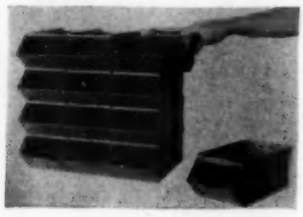
easy access to each container. The space can be made to accommodate the size of the part stored. Parts roll to the front automatically so that the stock is always seen at a glance.

— 265 —

Bins, Nesting

Simplex Tool Co., Woonsocket, R. I. [Vol.72,p.1007]

The bins save time in assembling of small parts; reduce handling time on production work, and eliminate counting in



inventory work. They are made in three sizes: 4 in. high x 5½ in. wide x 10 in. long, 5¼ x 7½ x 12½ in., and 6½ x 9 x 15 inches.

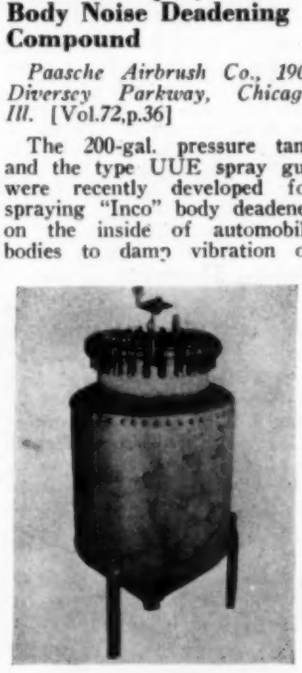
Painting Equipment

— 266 —

Tank and Spray Gun for Body Noise Deadening Compound

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill. [Vol.72,p.36]

The 200-gal. pressure tank and the type UUE spray gun were recently developed for spraying "Inco" body deadener on the inside of automobile bodies to damp vibration or



rumble. The 200-gal. tank has a 25-in. cover so that the deadening material can be hoisted and dumped in directly from barrels. Three 55-gal. barrels of compound are dumped into the tank before the operation is begun.

— 267 —

Airbrush, Multicolor

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill. [Vol.72,p.707]

Three or more colors can be applied at the same time by means of the "Multicolor" airbrush. Each color is controlled independently. Multiple heads

in 40 different combinations provide a wide coating range.

— 268 —

Spraying Unit with Silencer

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill. [Vol.72,p.932]

The universal motor air compressor unit supplied for paint spraying operations is now

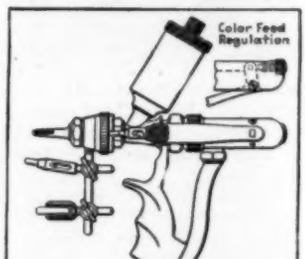
equipped with a special silencer and air-cooled handle. This device is compact and sturdy and furnishes an even paint flow suitable for light airbrush and sprayer use. It comes complete with a 10-ft. electric cord and 12 ft. of $\frac{5}{16}$-in. braided air hose.

— 269 —

Striper, Production, Type UHT, "Hudson"

Paasche Airbrush Co., 1909 Diversey Parkway, Chicago, Ill. [Vol.72,p.969]

Developed in co-operation with the Hudson Motor Car Co., the Type UHT "Hudson" production striper for the application of striping to automobiles and other products, is being offered to the trade by the above concern. This tool



is convertible and adjustable for any position. The handle and guides are removable for convenient access into narrow places, and nibs or striping blades in a variety of styles and sizes can be supplied to meet all striping requirements.

Among the features of the striper are: interchangeable nibs for a variety of stripes; revolving ball-bearing turret head.

Polishing Equipment

— 270 —

Buffer and Grinder, Pneumatic, No. 10-A, "Little Giant"

Chicago Pneumatic Tool Co., 6 East 44th St., New York, N. Y. [Vol.72,p.205]

Suitable for general light work, including the smoothing of flush-head rivets, the ma-

chine is now equipped with the closed-type, pistol-grip throttle handle instead of the open type, and can also be furnished with the straight-type throttle handle as optional equipment. The 4x¾-in. wheel is driven at 4,400 r.p.m. The length over-all is 16½ in., and the net weight, 8¼ pounds.

— 271 —

Polishing Lathe, "Ideal"

Schauer Machine Co., Cincinnati, Ohio. [Vol.72,p.508]

Hand polishing and finishing of small parts can be done as a production operation on the

"Ideal" speed lathe, which embodies a two-speed, totally inclosed, dustproof motor, an automatic brake, ball bearings, an extension in the motor spindle to take extra long stock, and a 4-in. chuck. High or low speeds are selected by means of a speed control switch.

The ½-hp. motor provides 2,700 and 1,350 r.p.m. on d.c. and 3,400 and 1,700 r.p.m. on a.c. circuits. The hollow spindle within the motor permits insertion of 1-in. rod or tube stock 9 in. long from the face of the chuck, thus making it possible to finish or polish 12 to 16 in. in length without the necessity of an end support.

The lathe is supplied regularly with a 3-jaw universal chuck to take 1-in. rod or tube stock and to chuck up to 4-in.

— 272 —

Polishing Lathe, Overhanging-Type, No. 55

Crown Rheostat & Supply Co., 1910 Maypole Ave., Chicago, Ill. [Vol.72,p.747]

Direct spiral gear drive is employed in the overhanging-type lathe. The overhanging spindle is placed forward from

the usual position by 10 in., thus bringing the spindle 4 in. in front of the face of the stand. This permits handling such work as long and curved pieces.

— 273 —

Polishing and Buffing Machine, "Cipco"

C. I. Packer Tool & Die Co., Britannia St., Meriden, Conn. [Vol.72,p.817]

Three polishing and buffing operations can be performed with one handling of the work on the "Cipco" automatic machine. The machine is adaptable to many types of work up to a maximum of 7½ in. diam.

Three ball-bearing, motor-driven, adjustable heads, or jacks, can be set so that the wheels will contact with the

work as the revolving expansion chucks advance into position. The height adjustment of these jacks is controlled by a handwheel on the side and a 90-deg. adjustment of the motor and buff wheel from the horizontal to the vertical is controlled by a gear and crank. Each motor on the adjustable heads is controlled by a separate snap switch.

The motors supplied on the jacks are of 3 hp. at 1,800 r.p.m., and are furnished for either two- or three-phase. The driving motor for the table is a multi-speed, constant-torque type, also of 3 hp. on 60-cycle, 220-volt current.

Floor space, 60x72 in.; weight, 2,513 pounds.

— 274 —

Buffer and Polisher, TexDrive, Model-M

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.72,p.857]

Gooseneck design of the stand has been employed so that the spindle and buffing wheels extend out from the base of the machine, permitting easy handling of large and odd-shaped pieces.

The motor mounting is of the external type with a rigid, four-point support. The motor is of ball-bearing design and equipped

with a dovetailed sliding base, including a gib with the necessary locking screws. Adjustment is effected by means of a handwheel and a feed screw.

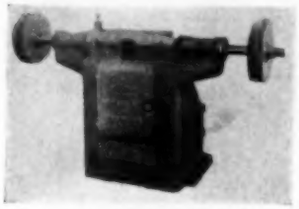
Different spindle speeds can be secured easily and quickly by merely changing the motor pulley. The design of the machine makes it possible to change the belt without pulling the spindle through the bearing housings.

— 275 —

Buffing Lathes, Nos. 16-M and 17-M

Bridgeport Safety Emery Wheel Co., Bridgeport, Conn. [Vol.72,p.892]

Large or awkward work can be buffed or polished on the Nos. 16-M and 17-M motor-driven buffing lathes. They are also valuable where a satisfactory spindle speed is obtainable with direct-connected a.c. motors. By changing the driving sheave on the motor, any one of the range of speeds may be obtained with a V-belt drive.



These are 2,000, 2,200, 2,400, 2,600, 2,800, and 3,000 rev. per minute.

The motors range from 5 to 10 hp. Regular equipment includes: automatic starter, overload and under voltage protection, push-button control, and two sizes of sheaves. Approximate floor space requirements range from 65x23 to 77x25 in., and the weights range from 1,050 to 1,260 lb. crated.

— 276 —

Burnishing Machine, Motor-Driven

Crown Rheostat & Supply Co., 1910 Maypole Ave., Chicago, Ill. [Vol.72,p.1043]

Unit design has been employed in this machine, and consideration has been given to loading and emptying, simplicity

of construction, capacity, life, and repair. Capacity of the basket is one bushel and the power required is ¾ hp. Roller bearings are used to obtain minimum power requirements and long life. The cylinder is of cast-iron with a wooden lining.

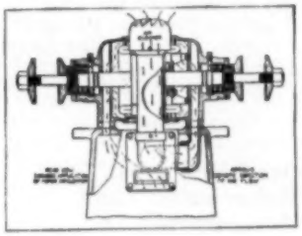
Floor space required is 66x30 in.; weight, approximately 950 pounds.

— 277 —

Motor Air Cleaner

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol. 72,p.634]

A motor air cleaner is now standard equipment on all grinders and polishers of 3 hp. and larger supplied by this com-



pany. This air cleaner is of the centrifugal type and is direct connected through a pedestal to the end bell of the motor. The motor is totally inclosed, and the specially designed fan on the spindle forces clean, cool air over the motor windings and through the opposite end bell. This insures operation at less than 40 deg. Centigrade.

Transmission Equipment

— 278 —

Speed Changers, Types C and S

Crocker-Wheeler Electric Manufacturing Co., Ampere, N. J. [Vol.72,p.72]

These speed reducers and increasers, with the mechanism built onto the rear end of standard motor frames, work by the adhesion of hard, ground, steel surfaces rolling upon each other and brought together by forces that insure driving without slip. These forces vary by means which are inherent in the operation of the mechanism itself. Two distinct types have been developed.

The Type C consists of a heavy cylindrical shell within which on the horizontal axis are three cylindrical rollers.

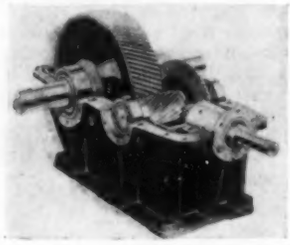
Speed reducers of the "C" type range from capacities of 1½ hp. in a 2:1 ratio operating at 1,750 r.p.m. to 50-hp. units in a 5 to 1 ratio operating at 690 r.p.m. The S type reducers range from 1-hp. sizes operating at 1,750 r.p.m. and being of 4 to 1 ratios, up to 20-hp. sizes in 5 to 1 ratios, operating at 690 rev. per minute.

— 279 —

Speed Reducers, Right-Angle-Drive

Falk Corporation, Milwaukee, Wis. [Vol.72,p.277]

This line of right-angle speed reducers includes both the horizontal and vertical shaft types. One feature of the right-angle drive is the combination of single helical and spiral bevel



gears. It is claimed that the reducer has an initial efficiency of 95 per cent.

The reversible construction of the gears and shafts is another feature. If the gears become worn, the shafts can be turned end for end.

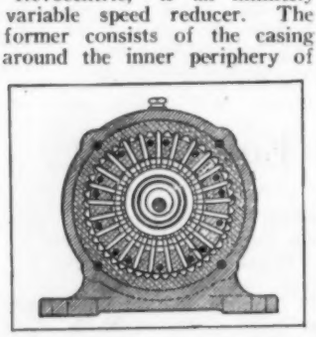
Ratings of this line of right-angle reducers range from $\frac{1}{16}$ hp. per 100 r.p.m. on the smallest unit to 565 hp. at 100 r.p.m. on the largest. Reduction ratios are from 15:1 to 518:1.

— 280 —

Speed Reducers, "Heliocentric" and "Revocentric"

Universal Gear Corporation, 327 La Salle St., Chicago, Ill. [Vol.72,p.546]

The first is a fixed-ratio speed reducer, known as the "Heliocentric," and the second, the "Revocentric," is an infinitely variable speed reducer. The former consists of the casing around the inner periphery of



which is an internal gear rack. Inside of this is a spool piece carrying a number of plungers that bear at their inner ends upon an eccentric driven at the motor speed. Reducers of this type are made for reductions of 8 to 1 up to 60 to 1. Sizes to transmit up to 50 hp. are available.

The "Revocentric" reducer consists of an adjustable throw eccentric on the input shaft driving five clutches through toggle joints, which are mounted between two disks on the output shaft. The eccentric rotates at the input speed.

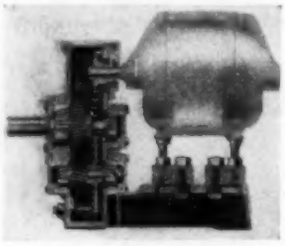
This reducer is infinitely variable in output speed from one-thirteenth of the input speed to zero. It is available in sizes up to 15 horsepower.

— 281 —

Speed Reducer, Improved

Cullman Wheel Co., 1346 Altgeld St., Chicago, Ill. [Vol.72, p.673]

Chief among the improvements is the substitution of Timken roller bearings for phosphor-bronze. First reduction is



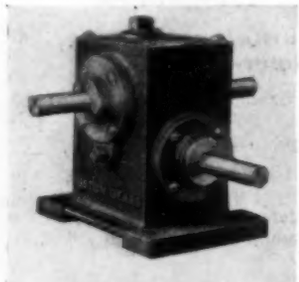
obtained by a chain and sprocket drive, from 2 to 6 times below the motor speed.

— 282 —

Speed Reducers, Light-Duty

Boston Gear Works Sales Co., North Quincy, Mass. [Vol. 72,p.675]

The Type AB reducer has the gear shaft over the worm shaft, and will transmit $\frac{1}{4}$ hp. with the motor running at 1,800 r.p.m.



Ratios are 5 to 1 and 20 to 1. The Type AD is similar to Type AB, but is especially adapted to installations requiring the use of a $\frac{1}{4}$-hp. motor running 1,800 r.p.m. Ratios in this model are 9 to 1, 18 to 1, 36 to 1, and 58 to 1. A third model, Type UC, has the worm shaft over the gear shaft and is of $\frac{1}{4}$-hp. capacity, the motor running at 1,800 r.p.m. A ratio of 48 to 1 is available. The Type AB weighs 8 lb., the Type AD 13 lb., and the Type UC 8 pounds.

— 283 —

Gear Unit, Mill-Drive, Westinghouse-Nuttall

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.72,p676]

A double-reduction gear unit for driving rolls in a steel mill

has been completed. The unit transmits power from a 1,600-hp. motor running at 705 r.p.m. through two sets of gears having a ratio of 14 to 1.

This unit is capable of developing more than 2,000,000-in. lb. at the low-speed shaft. The total weight, including flywheels, is about 40 tons.

— 284 —

Speed Reducers, Right-Angle, Spiral-Bevel-Gear

D. O. James Manufacturing Co., 1114 W. Monroe St., Chicago, Ill. [Vol.72,p.677]

The first of these has a vertical driven shaft, whereas the second has a horizontal driven shaft. The spiral bevel gears are mounted on Timken roller bearings, and the output speeds

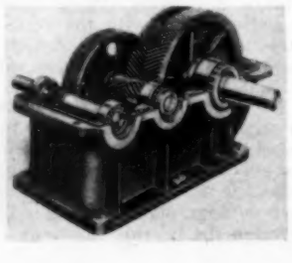
may range as high as 2,400 r.p.m., but ordinarily do not go beyond 1,800 r.p.m. Ratings range from $\frac{3}{4}$ to 100 hp., and ratios from 1 to 1 to 6 to 1.

— 285 —

Speed Reducers, Helical and Herringbone, "Titan"

Foote Bros. Gear & Machine Co., 111-No. Canal St., Chicago, Ill. [Vol.72,p.967]

"IXL" speed reducers are available with either herringbone gears or helical gears, the helical type having slight bearing modifications. They are made in both single and double reductions, the herringbone models being designated as the Types SB and DB and the helical models as SX and DX, respectively. On the single-reduc-



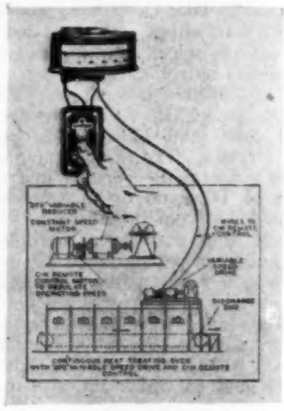
tion units, the ratios range from 2.87 to 9.9, and on the double-reduction units from 9.95 to 96.2.

— 286 —

Speed Changer, Remote Control for

Stephens-Adamson Manufacturing Co., Aurora, Ill. [Vol. 72,p.72]

By merely pushing the forward or reverse button of this electrical control for the Type JFS speed changer, the oper-



ator can increase or decrease the speed of conveyors or other machines from a remote point. The usual control handwheel is replaced with a spur gear driven forward or backward by means of a compact control motor mounted on the base.

— 287 —

Chain, "Hyper"

Link-Belt Co., Indianapolis, Ind. [Vol.72,p.750]

A durable, heavy-duty type of chain for positive drives has been announced. The chain is made from alloy steel, heat-

treated, and uses a special type of pin and cotter.

The Hyper SS-40 chain has an ultimate strength of 75,000 lb. and the SS-124, an ultimate strength of 150,000 pounds.

— 288 —

Clutch, Improved, "Super"

Carlyle Johnson Machine Co., Manchester, Conn. [Vol.72,p. 428]

Formerly, carbon-steel drop-forged clutch fingers were used, but in order to further increase

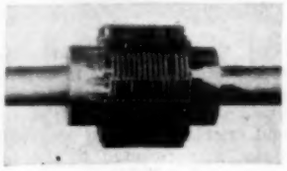
the wearing qualities and reduce breakage to a minimum, chrome-nickel steel fingers have been substituted. The clutch has also been improved by installing a method of locking the adjusting screw. Another improvement is the replacement of tool-steel adjusting blocks with chrome-nickel steel adjusting blocks. A fourth improvement is the Alemite system of lubrication.

— 289 —

Couplings, Flexible

Morse Chain Co., Ithaca, N. Y. [Vol.72,p.280]

This flexible coupling consists of two sprockets encircled by a Morse silent chain. The chain is held in place by a guide groove in one sprocket, while the other sprocket is free to float under the chain. Chain flexibility relieves coupling pinions of shock and binding. Also,



relative motion is possible between the sprockets and the chain, which is self-centering because of centrifugal force.

— 290 —

Pillow Block, Timkenized

Link-Belt Co., 910 S. Michigan Ave., Chicago, Ill. [Vol. 72,p.1047]

This self-aligning Timken bearing pillow block is available in commercial shaft sizes from 1 7/16 in. up. Features are: Ball and socket design for complete alignment, positive pressure lu-

brication, adequate closures, and double bearing construction.

The bearing elements consist of two Timken tapered roller bearings with inner races abutting and secured on the shaft by tapered adapter sleeves. Adjustment of the outer races of the bearings themselves is by a threaded cap on the smaller size pillow blocks and by a cap with shims and cap-screws on the larger sizes.

Welding Equipment

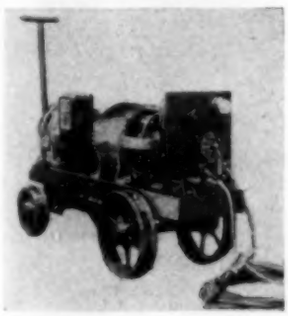
— 291 —

Welders, 100-Amp., Model S

Wilson Welder & Metals Co., Inc., Hoboken, N. J. [Vol.72, p.502]

A small, lightweight arc welder, suitable for operation in limited space and designated as the Model S, has been placed on the market. This machine is mounted on the Type 100-W frame.

The 100-amp. welder has a rating of one hour at full load



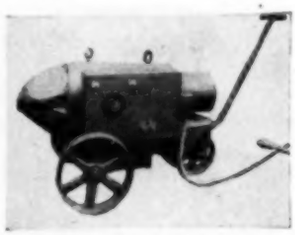
without more than a 50-deg. C. temperature rise, and has a welding range of 30 to 125 amp. Three models are available: electric-motor driven, gasoline-engine driven, and belt driven.

— 292 —

Welders, "Flex-Arc"

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.72,p.508]

By the use of the "Flex-Arc" principle as applied to this line of single-operator welders, it is much easier for the operator



to strike and maintain the arc under all operating conditions. This improvement is obtained by the use of special piece of apparatus known as "Flexactor," which tends to stabilize the volt-ampere curve under all operating conditions.

Other features of this machine are drip-proof and compact construction, mobility, wing nut terminals for welding cable connections, and a rheostat adjustment with calibrated dials for adjusting the welding current.

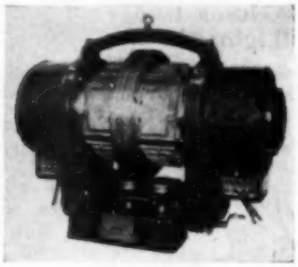
— 293 —

Generators, "Acyclic"

American Electric Fusion Corporation, 2610 Diversey Ave., Chicago, Ill. [Vol.72,p.746]

Heretofore, in the manufacture of tubing, in which the flat skelp is formed into a tube, and then electrically welded, an alternating current has been used. Although succesful at low speed, the current is not satisfactory for welding operations in excess of 60 ft. per min.

This defect may be overcome by the use of an electric welding unit known as the "Acyclic" generator. Instead of utilizing a.c. directly for welding, two



35-hp. motors drive the generator portion, which is itself capable of generating 20,000 amperes at 2½ volts. The arrangement of the generator is such that the delivery of welding current is made directly to the circular bus bars that surround the stator of the generator,. the welding rings being directly attached to these circular bus bars. Thus, while the rotor of the generator rotates at a high rate of speed within the generator frame, the frame itself rotates slowly over the seam of the tube as it passes beneath. On trial, it has been shown that speeds as high as 200 ft. per min. can be obtained readily.

— 294 —

Torches, Welding, for Airplane Production, "Rego"

Bastian-Blessing Co., 240-258 E. Ontario St., Chicago, Ill. [Vol.72,p.202]

Three torches for airplane welding work have been placed on the market. The Type SM torch illustrated is designed for gas tank and sheet-metal work where the same flame is used for hours. The torch is balanced for this class of work, and the weight is 17½ ounces with the tip.

The type AP torch is designed for welding such parts as fuselage, motor mounts, and tail plane assemblies. The assembly of the torch with the light weight goose-neck gives a weight of about 13½ ounces with

the tip. Various tips are supplied.

The Type JH torch is used for welding small fittings where an extremely delicate flame and tiny torch is needed. The weight is 6½ ounces with the tip. Another type, the RT, is used for heavy welds such as on landing gear.

— 295 —

Blowpipe, Welding, Type W-17

Oxweld Acetylene Co., 30 East 42nd St., New York, N. Y. [Vol.72,p.471]

A full-size blowpipe designed after the principle of the Type W-15 aircraft blowpipe, and designated as the Type W-17, has been placed on the market. This blowpipe is large enough for any welding job. Among the features is the one-piece

construction of the tip and head, being combined in a long and slender goose-neck. Ten welding heads are furnished.

The inner cone of the flame of the Type W-17 blowpipe is somewhat different from that obtained with any other blowpipe, it being shorter and thicker, and having a tendency to assume the shape of a bail at the end.

— 296 —

Welding Rod for Hard Facings, "Borod"

Stoody Co., Whittier, Calif. [Vol.72,p.31]

To give resistance to abrasion in a hard facing, comparable to tungsten carbide, the "Borod" welding rod has been developed. This rod consists of a soft steel sheath in which is held an intimate mixture of fine grains of tungsten carbide and other alloys held in place by a suitable binder. When melted down by the heat of either the electric arc or the oxy-acetylene flame, "Borod" forms a hard wearing surface.

The material has a hardness reading of about 65 to 70 on the Rockwell C scale, but in an abrasion test, the deposit compares favorably with pure tungsten carbide.

— 297 —

Welding Rod, Steel, High-Strength, No. 22 S.D

Oxweld Acetylene Co., 30 East 42d St., New York, N. Y. [Vol.72,p.431]

This welding rod has been developed especially to meet the demand for joints 100 per cent efficient in steel pipe and steel

having a carbon content of 0.30 to 0.40 per cent. In general appearance, weldability, and chemical and physical properties, the No. 22 S.D. rod is similar to the Oxweld No. 1 high-test rod, but it produces welds of even higher tensile strength. It is claimed that test coupons showed a tensile strength of 100,000 lb. per sq. inch.

The action of the No. 22 S.D. rod under the welding flame is similar to that of the No. 1 high-test rod. It is available in $\frac{1}{16}$- and $\frac{1}{8}$-in. diameters and 36-in. lengths.

— 298 —

Welding Rod, Fluxed, No. 6, "Weldite C"

Fusion Welding Corporation, 103rd St. & Torrence Ave., Chicago, Ill. [Vol.72,p.470]

Intended for carbon arc welding, the "Weldite C" No. 6 fluxed welding rod is particularly adapted to the welding of mild-steel plates and castings. It is said that the welding speed has been increased substantially, and that the deposit is strong and ductile and readily machinable.

— 299 —

Welding Rod, "Stainweld A"

Lincoln Electric Co., Cleveland, Ohio. [Vol.72,p.746]

This electrode, to be used for welding the commonly called "18-8 stainless steels," is claimed to give welds of the same chemical content as the stainless steel itself, resulting in a dense, ductile weld. This is accomplished by having the welding done in a protected atmosphere.

"Stainweld A" is obtained in three sizes, $\frac{1}{8}$ in., $\frac{5}{32}$ in., and $\frac{3}{16}$ in., of the regulation 14-in. lengths. It can be used for horizontal, vertical, or overhead welding.

— 300 —

Alloys, Welding, "Phos-Copper"

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.72,p.860]

Developed as a general welding and brazing material for copper and copper-base alloys, "Phos-Copper" welding alloys are made in rod and strip form and are composed essentially of copper and 5 to 10 per cent of phosphorus. The fluidity of the material is directly proportional to the phosphorus content.

"Phos-Copper" alloys begin to melt at approximately 1,292 deg. F., and become extremely fluid at 1,382 deg. F., for the rod, and 1,472 deg. F. for the strip. The presence of the phosphorus prevents the oxidation of both the copper and the surfaces being joined, thereby acting as a flux and producing a sound and dependable joint. The phosphorus partially burns out.

The strip form alloy is soft and sufficiently ductile to be slit to any desired width or length, and will form punchings down to a radius of 0.064 in. The latter are often desirable wherever pipe and coil connections are to be made.

The tensile strength of the deposit or joint varies from 18,000 to 30,000 lb. per sq.in., and is greater than that of copper, but the ductility is less.

— 301 —

Welding Rod, "Lightweld"

Lincoln Electric Co., Cleveland, Ohio. [Vol.72,p.892]

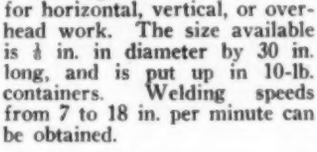
"Lightweld" welding rod can be used on 16, 18, 20 or 22 gage sheet in making lap, butt, or corner welds. It gives a dense weld free from pin holes, and is designed to be used with a manual carbon arc at from 30 to 60 amp. d.c. It is suitable for horizontal, vertical, or overhead work. The size available is $\frac{1}{8}$ in. in diameter by 30 in. long, and is put up in 10-lb. containers. Welding speeds from 7 to 18 in. per minute can be obtained.

— 302 —

Feeding Device, Electrode, Automatic

General Electric Co., Schenectady, N. Y. [Vol.72,p.200]

An improved feeding device on its automatic welding head has been announced by the above company. This improvement consists of the addition of geared drive to what was formerly the idler roller in the



feeding mechanism. In this way the large sizes of wire, which are stiff and hard to feed without excessive pressure on the driving rolls, are fed positively without slippage at a regular rate, and with only a moderate pressure between the driving rolls.

The improved drive roll gears furnished will accommodate any size wire from $\frac{1}{8}$ to $\frac{1}{4}$ in. in diameter without changing gears. Below $\frac{1}{8}$ in. the gears are not needed.

— 303 —

Holder, Electrode, Wachs

Northwestern Manufacturing Co., Milwaukee, Wis. [Vol.72, p.712]

Light weight and good balance are features of the Wachs metallic electrode holder. The handle is round, fits the hand, and is ventilated so that the holder can be used continuously

without becoming uncomfortably warm. A wedge holds the cable securely in place.

In place of a spring, the Wachs holder makes use of a simple compression lever. This lever has a protective covering and is locked in place by a roller operating against a fixed ratchet.

Two sizes are available. The first is for electrodes from $\frac{1}{16}$ to $\frac{1}{4}$ in. in diameter with capacity to carry currents up to and including 400 amp., and the second is for electrodes for $\frac{1}{4}$ to $\frac{1}{2}$ in., and currents between 400 and 800 amperes.

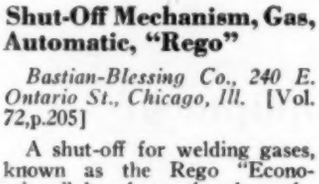
— 304 —

Shut-Off Mechanism, Gas, Automatic, "Rego"

Bastian-Blessing Co., 240 E. Ontario St., Chicago, Ill. [Vol. 72,p.205]

A shut-off for welding gases, known as the Rego "Economizer," has been placed on the market. By the use of such a device no gas is burned while the operator is setting up the work and no gas is wasted while readjusting the flame. As soon as the welding torch is lifted from the torch arm, a neutral flame is obtained.

Both shut-off valves in the



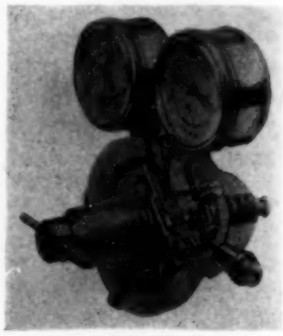
"Economizer" are of the diaphragm type. The arm body in the diaphragm bonnet is of forged brass. Another feature is the lava tip which draws sufficient air into the acetylene before ignition to produce complete combustion. A simple wall bracket may be supplied for holding the Economizer and the various tips.

— 305 —

Regulator, Multi-Stage, "Weldit"

Weldit Acetylene Co., 636 Bagley Ave., Detroit, Mich. [Vol.72,p.432]

To maintain the pressure and volume of welding gases under constant control, this multi-stage regulator has been placed on the market. Two separate regulators are placed in one



body, the first or primary stage reducing the initial tank pressure of 2,000 lb. per sq.in. to a maximum of 200 lb. The second regulator, or the secondary stage, is connected to the first so that the 200-lb. pressure in the body of the first passes into the second stage.

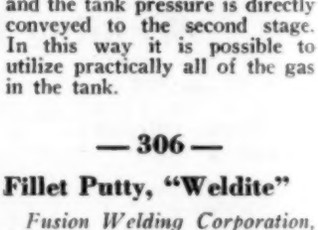
When the tank pressure is reduced below 200-lb., the first stage is cut out automatically, and the tank pressure is directly conveyed to the second stage. In this way it is possible to utilize practically all of the gas in the tank.

— 306 —

Fillet Putty, "Weldite"

Fusion Welding Corporation, 103rd St. & Torrence Ave., Chicago, Ill. [Vol.72,p.1042]

Covering unsightly weld beads is the function of "Weldite" fillet putty which is used to give a smooth, neat surface that



hardens quickly, adheres tenaciously, and is not loosened by shock or exposure. It is applied over the weld bead before painting and becomes substantially as hard as iron, one of its constituents. It is packed in 12-lb. cans.

Woodworking Equipment

— 307 —

Saws, Electric, Portable, Types 183 and 184

Speedway Manufacturing Co., 1834 South 52nd Ave., Cicero, Ill. [Vol.72,p.71]

The Types 183 and 184 portable electric saws are made with 12- and 10-in. blades, to take 4¾-in. and 3¾-in. cuts respectively. The first machine has a 1-hp. motor operating at 1,750

r.p.m. and the second a ¾-hp. motor operating at 1,800 r.p.m. Both of these saws operate on either a.c. or d.c. circuits.

The swinging saw guard pushes back out of the way when the cutting pressure is applied and returns to the guarding position the moment the pressure is released.

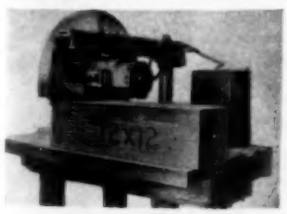
Both models are equipped with a D-type handle, adjustable to two positions. Cast aluminum is used for the motor cases, handles, and slipper plates. The weight of the Type 183 saw is 28 lb., and that of the Type 184 saw is 25 pounds.

— 308 —

Saw, Timber, Heavy-Duty

DeWalt Products Corporation, Leola, Lancaster County, Pa. [Vol.72,p.240]

For shops using heavy timbers for shoring purposes and the shipment of heavy machinery, the heavy-duty cutting equipment illustrated has been developed. Heavy timbers can be handled with ease by one man feeding the saw through the material by means of a hand ratchet gear feed or by chain feed on the arm of the machine. This arm may be raised or lowered to the depth of the cut. Saw blades up to 36 in. are provided to handle 12x20 in. material, or a 16-in. dado head may be used to dado to 3 in. The saw blade operates at 1,750 r.p.m. and is driven direct by a motor operating on 2- or 3-phase, 220- or 550-volt circuits.



Two models are supplied in this heavy-duty cutting equipment, the model L and the model T. The capacity of the first is 12x12 in., while that of the second is 12x20 in. The model T is mounted on an all-metal table, equipped with steel conveyor rollers for easy handling of heavy material. The elevating device is operated by a wheel in front of the table.

— 309 —

Saw, Portable, Safety, "Stanley-Crowe"

Stanley Electric Tool Co., New Britain, Conn. [vol.72, p.544]

The "Crowe" safety saws formerly manufactured by the Crowe Manufacturing Corporation, Cincinnati, Ohio, have been added to the line of portable

electric tools manufactured by the above concern. Four sizes are made to cut 2, 3, 4, and 6 in. deep, respectively. Blades can be furnished in cross-cut, rip, or combination types.

The "Stanley-Crowe" saws are equipped throughout with ball bearings, and all parts are interchangeable so that replacement of worn parts can be made without inconvenience.

— 310 —

Saw, Portable, Electric

Van Dorn Electric Tool Co., Cleveland, Ohio. [Vol.72,p.677]

Three sizes of portable electric saws have been added to the line manufactured by this company. These are 6-, 8- and 10-in., driven by universal motors, and incorporating an auto-

matic safety switch and automatic telescopic guard.

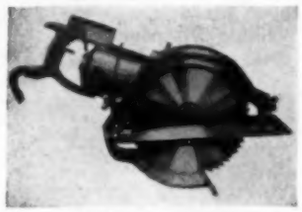
These saws are fully adjustable, having thumb screw adjustments for regulation of depth of cut, width of cut, and a graduated adjustment for beveled cuts. The maximum adjustment for depth of cut of the 6-in. saw is 1¾ in.; 8-in. size, 2¼ in.; and 10-in. size, 3½ inches.

— 311 —

Saw, Electric, "Wodack"

DeWalt Products Corporation, Leola, Lancaster County, Pa. [Vol.72,p.709]

Announcement has been made by the above concern that it has acquired the Wodack electric handsaw, which it to be manufactured in four models by the



Wodack Division. Of the four sizes manufactured, the Model K weighs 15 lb., with a cutting capacity of 2⅜ in., Model C with 4½ in. cutting capacity; Model B with the same cutting capacity as Model C and the addition of a beveling feature, and the Model D for handling 4½ in. material, and also equipped with the beveling feature.

The device was described on page 680, Vol. 71, of the *American Machinist.*

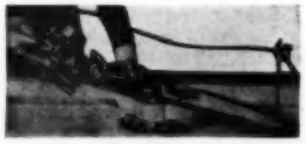
— 312 —

Table Attachment for "Speedmatic" Saw

Porter Cable Machine Co., Syracuse, N. Y. [Vol.72,p.709]

When it is desired to change the hand type "Speedmatic" power saw to a table model, this table attachment can be employed. The change can be effected in less than one minute.

The swivel base upon which



the arm swings has a graduated scale of 60 deg. either side of zero, although the arm can swing in a circle. Adjustment is also provided for fluting, stripping, and dadoing. For ripping, the position of the saw is quickly changed over to another segment on the attachment.

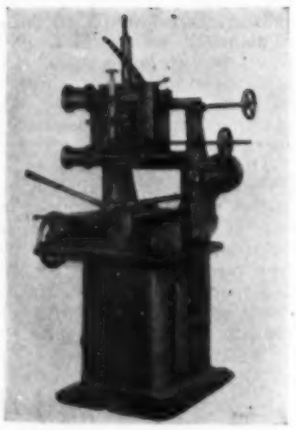
The weight of the attachment including the saw is 52 pounds.

— 313 —

Profiling Machine, Horizontal, Two-Spindle, Improved, No. 3

Frew Machine Co., 124 West Venango St., Philadelphia, Pa. [Vol.72,p.280]

The No. 3 horizontal profiling machine is intended for working wood, fiber, or other



soft material for which a high spindle speed is desired. The spindle is carried in ball bearings, and on the belt-driven machine it runs at 4,500 r.p.m. Direct motor drive can also be furnished.

The spindle is mounted in a slide having a total movement of 3¾ in. This slide is provided with an adjustable lock stop. The cross movement of the spindle is 3 inches.

Specifications: working surface of table, 12x15½ in.; movement of table, 15½ in.; distance from table to spindle centers, 7 in.; distance between uprights, 16 in.; largest diameter cutter, 6 in.; and weight, 1,800 pounds.

— 314 —

Joiner, Hand, No. 10

J. D. Wallace & Co., 134-158 So. Calif. Ave., Chicago, Ill. [Vol.72,p.672]

An 8-in. jointer, this machine is equipped with a skew-knife cutter head, in which the knife holder is die-cast around a steel

shaft and the knives lay on flat surfaces. The cutter head is balanced and the skew angle is so fixed that one end of the knife leads the other end by approximately ¼ in.

— 315 —

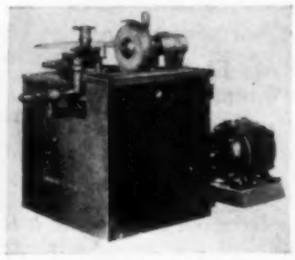
Sharpener, Cross-Cut-Saw, Automatic, No. 4

Samuel C. Rogers & Co., 191 Dutton Ave., Buffalo, N. Y. [Vol.72,p.202]

This No. 4 automatic circular saw sharpener is designed for gumming and sharpening wood cutting, rip, and cross-cut saws, and also slitting and other metal-cutting saws. The machine is adapted for almost every kind of circular saw made, and has positive adjustments for maintaining the same degree of bevel the entire length of the grind.

Circular wood-cutting or metal-cutting saws from 3 to 30 in. in diameter, with teeth from 10 points per in. up to 2½-in. spacing, can be handled at a rate of 30 to 50 teeth per minute. The machine is full automatic in operation.

Three grinding wheels of proper grade and grain are furnished with each machine, one 6x½ in., one 6x¼ in., and one 6x$\frac{5}{16}$ in. Tight and loose pulleys can be furnished for belt drive or a ½-hp., single-phase, direct-connected motor for motor drive. The floor space for



the belt-driven unit is 18x20 in., and for the motor-driven machine, 18x34 in. Height, 28 in. Weight, 275 pounds.

Small Tools

—316—

Drill, High-Speed, "Blue Diamond"

Whitman & Barnes, Inc., Detroit, Mich. [Vol.72,p.889]

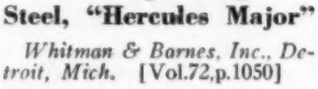
Different design from small high-speed drills and special heat-treatment are claimed to give "Blue Diamond" high-speed drills ability to penetrate faster on steel forgings, cast iron, cold rolled steel, brass, bronze, aluminum, and alloys. They are furnished in jobbers' sizes from $\frac{1}{16}$ to ½ in. by 64ths and wire sizes from Nos. 1 to 55, inclusive.

—317—

Drill for High-Manganese Steel, "Hercules Major"

Whitman & Barnes, Inc., Detroit, Mich. [Vol.72,p.1050]

Production drilling of high-manganese steel on an economical basis is the function of this special cobalt-tungsten drill. The web is heavier and the twist but two-thirds the length



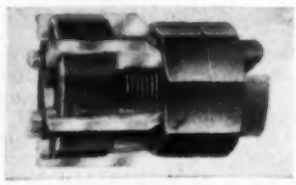
of regular taper-shank drills, making for sturdy construction. The drill is pointed with a 68-deg. angle and the cutting lip has been blunted to strengthen the cutting edge.

—318—

Reamer, Expansion, Type L

Davis Boring Tool Co., 6200 Maple Ave., St. Louis, Mo. [Vol.72,p.671]

Radially relieved on the diameter, this tool has a body of high-carbon nickel steel, heat-treated for toughness. Regular blades are made of high-speed steel, but blades of Stellite or other materials can be furnished. All blades are locked from the front, taking the cut-



ting thrust against the back and bottom of the slot.

Spiral bladed reamers, either right or left hand, carry a 10-deg. spiral angle. All parts are made interchangeable. The reamer as a whole may be incorporated into any type of tooling for special requirements. The shell type has an arbor hole with ½-in. taper per foot, but a straight hole can be furnished.

—319—

Reamer, Pipe, 4-Inch, No. 414

The Oster Manufacturing Co., Cleveland, Ohio, and Williams Tool Corporation, Erie, Pa. [Vol.72,p.823]

Four-inch pipe may be reamed by means of this hand-operated reamer. The No. 414 reamer can be used for hand operation

by means of two additional handles, but may also be employed with the Oster No. 414 Power Boy.

—320—

Reamer, Expansion

Huff Machine Works, 44 Exchange St., Milford, Mass. [Vol.72,p.895]

Adjustment through very small increments is the feature of the square reamer. The wooden guide shoe is movable along the taper side of the reamer, this movement being effected by loosening the outside nut on the stud and turning the inside one against the reamer tip. The expansion is equal throughout the reaming length, and the adjustable guide re-

mains parallel with the cutting edges. A stud fixed in the shoe and passing loosely through the reamer tip holds the shoe in place.

Each guide shoe provided has an adjustment of $\frac{5}{32}$ in., and several of them are provided with each reamer. In all there are nine different reamers available, ranging from the one designated as *A* to the one known as *I*, inclusive. The first size *A* has an expansion of $\frac{7}{16}$ to ¾ in., and the last size *I* from 1$\frac{7}{16}$ and 1$\frac{13}{16}$ inches.

—321—

Reamers

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol. 72,p.1046]

The No. 1,100 adjustable blade reamer of the "Critchley" type is furnished with unusually heavy blades. Interchangeable replacement parts are available. The reamer is capable of a wide range of adjustments and one of the features is the use of

float rings between the blades and adjusting nuts. This particular reamer is designed for general use.

The No. 3438 spiral expansion reamer with pilot bushing is for production of holes which must be in perfect alignment. The slip or floating pilot is tapered on the outside diameter making a snug and positive fit in the hole to be reamed. An adjustable pilot is also available on the type specified for aircraft work. Either type has four blades, sliding on taper seats and expanded uniformly by nuts at each end of the bushing.

The No. 3439 spiral expansion piston pin reamer is for servicing pistons and other jobs.

The No. 3599 high-speed-steel, quick-spiral taper pin reamer is designed for reaming taper pin holes by power and can be run at drill speeds in portable electric drills and other electric tools.

—322—

Stock, Pipe, Three-Way

Oster Manufacturing Co., Cleveland, Ohio, and Williams Tool Corporation, Erie, Pa. [Vol.72,p.893]

This three-way threader for ⅜-, ½-, and ¾-in. pipe will cut a standard length thread on a pipe close to a machine frame. It uses the same open-type die

holders as the regular "Chip Chasers." It is small, light, and equipped with a large handle to permit easy threading.

—323—

Stock, Pipe, and Reamer, "Oster-Williams"

Oster Manufacturing Co., 2057 61st St., Cleveland, Ohio, and Williams Tool Corporation, Erie, Pa. [Vol. 72,p.970]

The No. 0.001 "Chip Chaser" for ¼- to 1¼-in. pipe is available from both of the above companies. This tool is built on the same principle as the No. 00 "Chip Chaser," but has an im-

proved, open-type diehead that allows unusual chip clearance and makes it easy to lubricate the pipe. The No. 0.001 "Chip Chaser" has four dieheads ⅛, ¾, 1 and 1¼ in., and a ratchet handle.

The "Chip Chaser" reamer fits the ratchet handle.

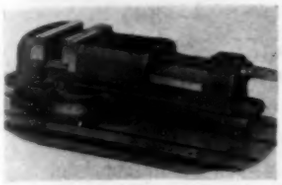
—324—

Vises, Plain and Swivel

Cincinnati Milling Machine Co., Cincinnati, Ohio. [Vol.72, p.387]

The fixed-jaw section of these vises and the abutment, which forms the support for the screw that moves the movable jaw or slide, have been materially enlarged. The jaws are made of hardened and ground steel.

The bottom of the plain vise is finished to enable it to be converted into a swivel vise. The No. 3 plain and swivel



vises have jaws 6½ in. wide by 1⅝ in. deep with a 4-in. opening, while the No. 5 vise in both styles has jaws 8⅛ in. wide by 2¼ in. deep and with a 7-in. opening. These vises now form part of the regular equipment of the milling machines manufactured by the above company.

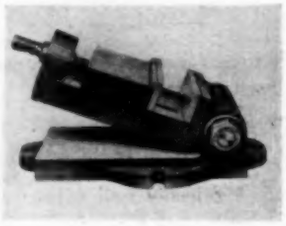
— 325 —

Vise, Machine, Adjustable, "Palmgren"

Chicago Tool & Engineering Co., 8389 So. Chicago Ave., Chicago, Ill. [Vol.72,p.1048]

Three sizes of this "Palmgren" adjustable vise are available, the jaw sizes being 2½, 4, and 6 in. This tool may be had with or without swivel bases.

A feature is the tilting ar-



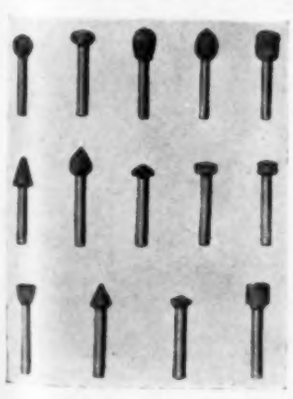
rangement, movement being accomplished by a T-wrench furnished with each vise. Graduations on the hub make easy resetting to any angle, and a special locking device prevents slipping. The jaws are removable, and are made of hardened and ground tool steel.

— 326 —

Burs, Mill-Cut

Keller Mechanical Engineering Corporation, Brooklyn, N. Y. [Vol.72,p.974]

Fourteen shapes of mill-cut burs have been added to the line. These supplement the regular line of ¼ and ½-in., file-cut burs made of high-speed



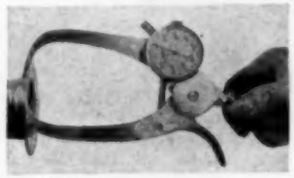
steel and the standard line of mill-cut burs. They have ¼-in. shanks, and the various shapes range up to ½ in. in diameter.

— 327 —

Caliper, Dial, "Un"ed"

United Tool & Die Co., 324 Ann St., Hartford, Conn. [Vol. 72,p.351]

Designed to measure drawn work, castings, forgings and other parts, this dial caliper makes use of an Ames indicator graduated to read in 0.010 in., the total measurement being to



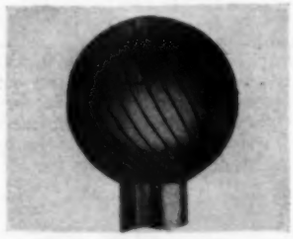
2 in. One arm is detachable to permit replacing with any special arm to suit the customer's requirements. The dial caliper is made in two sizes, 5 and 9 inches.

— 328 —

Files, Ball, "Profilo"

Rotary File Co., c/o The Equipment Co., 6351 Brush St., Detroit, Mich. [Vol.72,p.1009]

These files are claimed to be accurate because of the generated form, and give smooth



surface finish through the spiral flutes. They have standard clearance and are manufactured in various sizes.

— 329 —

Level, Centering, Optical

Bausch & Lomb Optical Co., Rochester, N. Y. [Vol.72,p.543]

Setting up cylindrical work with relation to milling cutters, gear cutters, saws or drills is facilitated by the use of an optical centering level. The in-

strument has a short horizontal V and a long vertical V. Above the short V is a level vial.

— 330 —

Micrometer, Dial

B. C. Ames Co., Waltham, Mass. [Vol.72,p.281]

Easier reading to thousandths by means of widely spaced dial graduations is the chief feature of this dial indicator micrometer. Two dials are employed. The smaller indicates the revolutions of the large pointer, each graduation of the small dial representing 0.1 in. The large dial has 100 widely spaced graduations around the

dial, each representing 0.001 in. The range is to 1 inch.

By operating the spindle lock, the tool may be used as an adjustable snap gage.

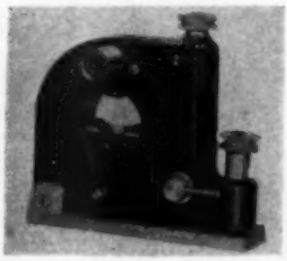
— 331 —

Protractor, Optical, Bevel

Bausch & Lomb Optical Co., Rochester, N. Y. [Vol.72,p.507]

For precise work where the usual protractor would not be sufficiently accurate, this optical bevel protractor can be used. The device has an accurately machined base on which the main body is hinged, and can be swiveled by turning the thumb screw at the lower front. The level vial may be positioned accurately.

The dial is graduated to one-



sixth of a degree, and every degree line is designated by a number. The graduations are observed through the eyepiece, which so magnifies the spaces between the graduations that a vernier can be read with ease to within one minute of arc. The instrument has been found useful for checking dovetail surfaces of machine tool slides.

— 332 —

Screw Plates, "Pericles"

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol. 72,p.1049]

Through various improvements, these "Pericles" screw plates are now made at suitable cost for shops having only occa-

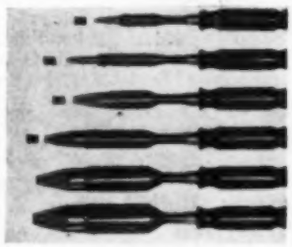
sional use for such tools. They are claimed to be accurate for high quality work despite their moderate cost.

— 333 —

Soldering Irons, Electric, Industrial, "Esico"

Electric Soldering Iron Co., Inc., 135-139 West 17th St., New York, N. Y. [Vol.72,p. 281]

A range of soldering irons for all industrial purposes and designed so that the heating elements are replaceable without discarding the case, terminal, and other parts, has been



placed on the market. Another feature is that the end of the heating element is so designed that the tip seat does not deteriorate with use, so that when tips wear down close to the element it is only necessary to tap them with a hammer and unscrew them.

Six different types are manufactured. The over all lengths range from 10½ to 14½ in.; the weights, exclusive of cord, from 6 to 54 oz., and the tip diameters, from ⅜ to 1⅝ inches.

— 334 —

Template, Adjustable, "Maco"

American Maco Template Co., 44 Whitehall St., New York, N. Y. [Vol.72,p.860]

Difficult contours may be taken exactly in a few moments by means of the "Maco" adjustable template. In the checking of parts for wear, such as locomotive driving wheels, crankpins, journals, and other parts,

the device is a ready means of determining whether or not a dangerous limit has been reached, and the profile taken by the instrument may be traced on a record sheet.

The template is composed of a number of very fine strips of hard-drawn brass, the thickness of each being 0.007 in. These laminations are held in position in the aluminum frame by two clamps and will not fall out because of corrugated strips of rubber bearing against them.

Parts and Mechanisms

— 335 —

Ball Bearing, End-Thrust, T-114-R G

Auburn Ball Bearing Co., Rochester, N. Y. [Vol.72,p.710]

This bearing fits in a recess at the end of the shaft. The two races and the balls are held together as a unit by a rod in

the center, which is flanged on the ends, permitting free rotation of the races. The construction affords easy handling.

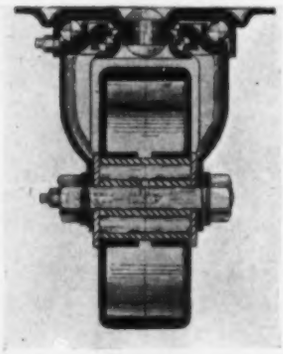
The bearings are available in sizes from 1 3/16 to 3 13/16 in. in diameter.

— 336 —

Casters, Ball-Bearing, Parkerized

Saginaw Stamping & Tool Co., Saginaw, Mich. [Vol.72, p.472]

In order to combat corrosion and thus maintain maximum operating efficiency, these roller bearings casters are now Parkerized. The corners of the



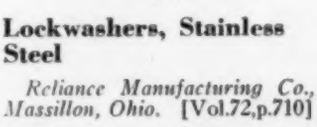
wheel are well rounded to eliminate floor cutting, and the stock from which it is made is particularly heavy. Casters are available in a range of sizes.

— 337 —

Coupling, Valve, "Quick-As-Wink"

C. B. Hunt & Sons, Salem, Ohio. [Vol.72,p.818]

The by-pass principle is incorporated in the "Quick-As-Wink" shut-off valve and coupling. A ¼-in. push or pull on the outer member is the only movement required to turn the flow of air on or off anywhere in the hose line, automatically bleeding air for removal of tools for repairs or oiling. It is claimed that, in spite of the free-swiveling of coupling and



valve, they are air tight at pressures up to 1,000 lb. per square inch.

"Quick-As-Wink" valves and couplings are made in all sizes from ⅛ to 4 in.

— 338 —

Lockwashers, Stainless Steel

Reliance Manufacturing Co., Massillon, Ohio. [Vol.72,p.710]

The company is prepared to furnish the trade with these lockwashers in any size or section. It is claimed that in addition to having all the qualities of a non-corrosive stainless steel, they are of a spring temper equal to that of the ordinary steel lockwasher.

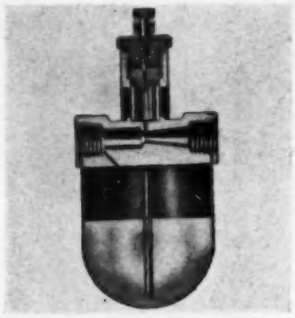
This company is also in a position to furnish stainless steel in coils or straightened wire, cut to length in any small section—round, flat, square, or hexagon—from 0.022 to ⅜ inch.

— 339 —

Lubricator, Air Line "Norgren"

J. N. Fauver Co., 31 Brady St., Detroit, Mich. [Vol.72, p.1048]

Injection of lubricant into the air stream furnishing power to air-operated tools is the function of the "Norgren" sight-feed, automatic air-line lubricator. This device is manufactured by the Carl A. Norgren Company, Denver, Colo., and is distributed exclusively by the above concern. It is adjustable to any demand by



means of a needle valve and is entirely automatic.

The "Norgren" air-line lubricator injects oil into the air stream one drop at a time. The oil injected is dissipated into a fog, placing a film on the moving parts. The device is manufactured in ⅜, ½, ¾, and 1-in. pipe sizes.

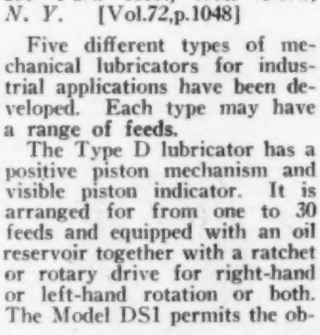
— 340 —

Lubricators, Mechanical

Nathan Manufacturing Co., 250 Park Ave., New York, N. Y. [Vol.72,p.1048]

Five different types of mechanical lubricators for industrial applications have been developed. Each type may have a range of feeds.

The Type D lubricator has a positive piston mechanism and visible piston indicator. It is arranged for from one to 30 feeds and equipped with an oil reservoir together with a ratchet or rotary drive for right-hand or left-hand rotation or both. The Model DS1 permits the ob-



servation of the oil feed in the form of drops. It is advocated only for cylinder lubrication and extreme cases.

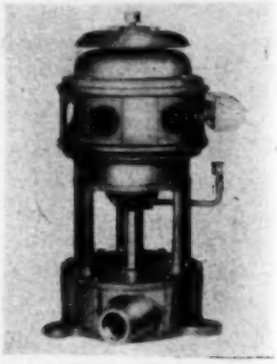
Smaller lubricators are available in Type P, PK, and PS. The Type P has from 1 to 11 feeds supplied with an oil reservoir. It is also suitable for ratchet or rotary drive and may be built into small or medium-size engines or machines where it can be adapted to conditions of driving mechanism and piping. The Type PK lubricator is similar in construction to the Type D, but is more compact. The Type PS is similar to the Type D, but is provided with

— 341 —

Pump, Coolant, Vertical, Model A-L

Ruthman Machinery Co., Cincinnati, Ohio. [Vol.72,p.637]

Designed for supplying coolant to a number of machines from a central reservoir, the Model A-L two-stage coolant



pump is capable of developing a pressure of 39 lb. per sq.in., and is equipped with a ½-hp. motor running at 1,725 r.p.m.

— 342 —

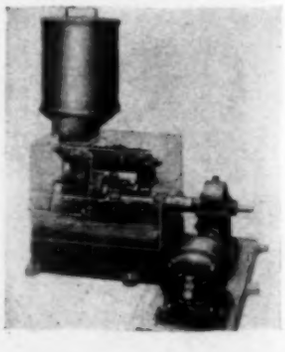
Pump, Grease, Mill-Type, "Anderson"

Hill-McCanna Co., Chicago, Ill. [Vol.72,p.709]

Fully mechanical means for pumping heavy mill greases is embodied in the "Anderson" pump, which delivers measured quantities of lubricant. Grease is introduced into the feeding system of the grease pump by means of a displacement pump. A distributor head with the requisite number of leads is directly connected to the discharge side. The indexing of the head is secured by means of a ratchet attachment.

Delivery lines are attached to the distributor head and lead to the connections on the equipment bearings. A steam-heating element is installed in the bottom of the hopper casting. The grease hopper has a capacity of 60 pounds.

Present models consist of 4, 6, 8, 10, and 12 feeds per unit. Special sizes are made up to 24 feeds per unit. Pressures up to 5,000 lb. per sq.in. can be maintained.

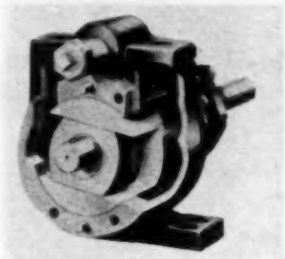


— 343 —

Pump, "Rotapiston"

Globe Products Co., Cleveland, Ohio. [Vol.72,p.856]

Only four parts are used in the "Rotapiston" pump. These moving parts are the cam-shaft, two pistons, and the revolving rotor. No springs nor suction and discharge valves are required. Because the pump requires no priming, it is particularly adapted to uses where instant action and general reliability are essential features. Three sizes are manufactured: ½ gal., 1 gal., and 2 gal. per minute for each 100 revolutions of the drive shaft.



The "Rotapiston" pump is normally set for clockwise rotation. Three sizes are available, that is Nos. 1, 2 and 3, having pipe connections of ¾, ¾ and 1 in., respectively.

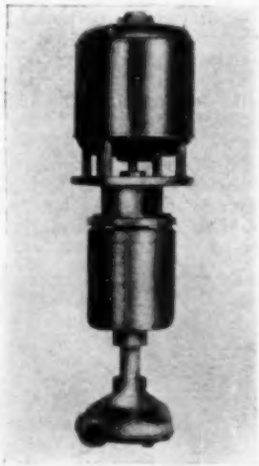
— 344 —

Pump, Coolant, "Gyro"

The Equipment Co., 6351 Brush St., Detroit, Mich. [Vol. 72,p.970]

Sizes to furnish 10, 20, or 50 gal. per min. are available. This pump has no packings to leak or screen to clog. It is always primed.

A variety of drives can be had to meet conditions. The drive shaft is integral with the counterweight. The arches above the impeller are specially designed to eliminate swirl in the tank. The intake is by gravity feed.



— 345 —

Pumps, High-Pressure, Type BM, Bussman

Index Machinery Corporation, 49 Central Ave., Cincinnati, Ohio. [Vol.72,p.971]

For use on broaching, bending, straightening, assembling, and testing presses, as well as presses for molding plastic materials, a Bussman hydraulic pump combining a low-pressure stage and a high-pressure stage has been imported.

Among the features are: low-pressure stage gives large delivery for filling the cylinder, giving quick approach and return of ram; high-pressure stage gives small delivery for pressing; automatic change from low to high pressure;

pressure control by a hand-wheel, from 300 to 4,200 lb. per sq.in. variable delivery of oil in the high-pressure stage. All moving parts working under pressure are of chrome-nickel steel. The pumps can be arranged in the oil container or in the machine base. They are driven by electric motor with reduction gears.

Nine sizes are available, having capacities of 4.6 to 25.6 gal. per minute at the low-pressure stage and 0.30 to 5.30 gal. per minute on the high-pressure stage.

Materials

— 346 —

Copper Alloy, Hardened, "P.M.G." Metal

Driver-Harris Co., Harrison, N. J. [Vol.72,p.709]

As a substitute for phosphor-bronze, manganese-bronze, and gun-metal, "P.M.G." metal was developed by Messrs. Vickers-Armstrong, Ltd., Barrow-in-Furness, England. The material is now available in the United States through the above concern. It is claimed to be superior to manganese bronze, to 70/30 brass, and to 9 per cent aluminum bronze for many applications.

"P.M.G." metal was originally intended as a substitute for Admiralty gun metal, the standard composition of which is 88 copper, 10 tin, and 2 zinc. The metal is a copper alloy, in which the 10 per cent tin is replaced by 10 per cent of a special hardener.

The alloy as cast contains as constituents 2 per cent iron, 3.4 per cent silicon, and 2 per cent zinc. Hardening is a result presumably of the presence of iron silicide. The properties can be modified by heat-treatment, consisting in quenching with or without reheating. Heated castings do not scale.

One group of sand cast bars had a yield point of 23,500 lb. per sq.in., ultimate stress of 47,500 lb. per sq.in., elongation of 10 per cent in 2 in., and a fine fracture. The material can be forged hot without cracking. After forging to a black heat, the properties are as follows: yield point, 82,650 lb. per sq.in.; ultimate stress, 94,000 lb. per sq.in.; elongation, 17 per cent in 2 in.; and silky fracture. The Brinell hardness ranges from 104 as cast to 153 as forged.

— 347 —

Silicon-Bronze, "Duronze"

Bridgeport Brass Co., Bridgeport, Conn. [Vol.72,p.1005]

Better machinability and strength can be obtained in "Duronze" silicon-bronze alloy than in phosphor-bronze. In the annealed condition, the alloy has a strength of 42,000 lb. per sq.in., but develops a strength of approximately 130,000 lb. per sq. in. when severely cold drawn.

"Duronze" does not wear cutting tools excessively. In threading, tools such as are designed for copper are suitable for "Duronze," and for stamping, forming or drawing, the same layout for tools as is designed on brass will work with equal satisfaction. It is claimed to offer equal or even greater resistance to abrasion than phosphor bronze and also greater resistance to fatigue.

"Duronze" can be welded, soldered, buffed, plated, and machined. It is available in sheet, strip, rod, and wire.

— 348 —

Steel, Chromium and Chromium-Nickel, "U S S"

United States Steel Corporation, Pittsburgh, Pa. [Vol.72, p.1047]

The above corporation, through its subsidiary companies, is now engaged in the production and finishing of stainless and heat-resistant, low-carbon steels. "U S S" chromium steel 16-18 and also "U S S" chromium nickel steel 18 and 8 are made in a series of compositions or grades so that a variety of requirements may be met from both the standpoint of physical properties and chemical characteristics.

These steels are being produced at the subsidiary plants: American Steel & Wire Co., American Sheet & Tin Plate Co., Carnegie Steel Co., Illinois Steel Co., and the National Tube Co.

Miscellaneous Equipment and Supplies

— 349 —

Box Strapping, "Colorgraph"

The Stanley Works, New Britain, Conn. [Vol.72,p.507]

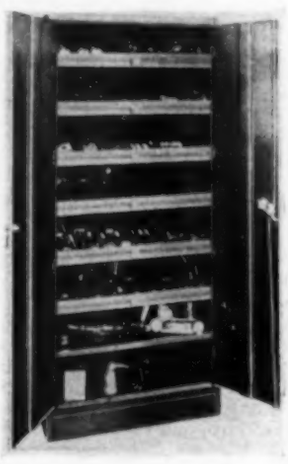
A great variety of colors may be used or any special design or mark can be readily reproduced on "Colograph" box strapping. This strapping offers a very effective means of displaying instructions from shippers and effects time and labor savings over the stenciling method. It also advertises the shipper's products.

— 350 —

Cabinets, Tool, All-Steel, "A-S-E"

All-Steel-Equip. Co., Aurora, Ill. [Vol.72,p.895]

To meet the need of safe storage of such tools, all-steel storage cabinets have been announced. Each of the four types offered have steel angle and channel frames, with substantial body members to sustain heavy weights. Standard equipment includes six sloping shelves with five adjustable partitions in each, and one horizontal shelf



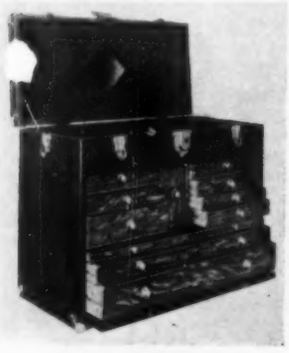
near the bottom. All tools are in plain sight. Compartments can be labeled and all shelves are adjustable.

— 351 —

Chest, Tool, No. 42

H. Gerstner & Sons, 178 Columbia St., Dayton, Ohio. [Vol.72,p.897]

A larger variety and a somewhat different arrangement of drawers are found in the No. 42 tool chest. The chest has three full length drawers, 18½ in. long inside, and seven drawers 7½ in. long inside. There is also an upright center drawer designed to receive the *American Machinist's* Hand-



book, or a drill block, and there also is a roomy top compartment.

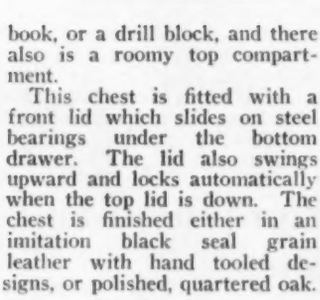
This chest is fitted with a front lid which slides on steel bearings under the bottom drawer. The lid also swings upward and locks automatically when the top lid is down. The chest is finished either in an imitation black seal grain leather with hand tooled designs, or polished, quartered oak.

— 352 —

Chests, Machinists'

Baker-Case Manufacturing Co., Inc., Racine, Wis. [Vol. 72,p.897]

Four models, two each in the 17 and 20 in. sizes, have been placed on the market. Features are: steel drawer runners;



locked corner and glued construction; hand fitted drawers; leather handles; nickel-plated drawer pulls; felt-lined drawer bottoms, and nickel-plated hardware.

— 353 —

Chest, Tool, Steel, "A-S-E"

All-Steel-Equip. Co., Aurora, Ill. [Vol.72,p.969]

An extra large and heavy tool chest designed for manufacturers and installers of equipment, particularly when it is

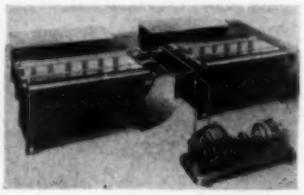
necessary for the workman to carry a complete set of erection tools to each job, is being offered. This chest is made of 14-gage sheet steel and equipped with handles on each end. It is reinforced by bands on the top and bottom and around the cover.

— 354 —

Cleaning Process, Electro-Chemical, Bullard-Dunn

The Bullard Co., Bridgeport, Conn. [Vol.72,p.633]

Of two distinct applications, the first is the complete removal of scale and oxides from the surfaces and recesses of metallic products in order to effect economies in the subsequent steps of manufacture and to show up any cause for rejection imme-



diately. The second application is the cleaning of metal products before plating.

As an operation preliminary to electroplating, the process has been proved of value. Several different solutions have been developed for effective cleaning and de-scaling of ferrous and non-ferrous metals. The plated surface is practically indestructible.

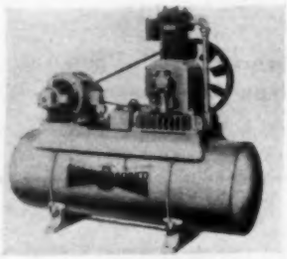
Equipment required consists of a d.c. generator, tanks equipped with steam, water, and electrical connections, and a ventilating system.

— 355 —

Compressor, Single-Stage, "A-C-E"

Gardner-Denver Co., Quincy, Ill. [Vol.72,p.319]

This air-cooled, single-stage compressor is known as the "A-C-E" model, and consists of a 3½x4-in. duplex compressor, and a 5-hp. motor mounted on a cast-iron base on the top of



the air receivers. The compressor has a displacement of 26 cu.ft. per min., and operates at the rate of 600 r.p.m. This rate can be altered.

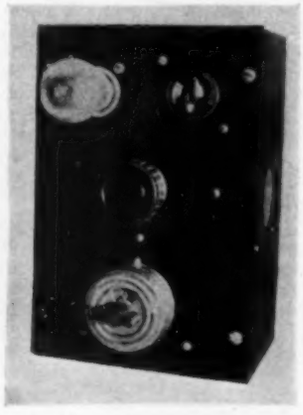
A feature is the inclosing of the suction and discharge valves in separate compartments. The use of compartments prevents heating of the air when passing through intake valves. An automatic or hand-operated start and stop control is furnished as standard equipment.

— 356 —

Controller, Heat, for Electric-Soldering Irons

Clarostat Manufacturing Co., Inc., 285 N. Sixth St., Brooklyn, N. Y. [Vol.72,p.1010]

A device that maintains proper heat on electric soldering irons has been developed. It is in the form of a metal box with a front panel carrying a pilot light, a receptacle to take a sol-



dering iron plug, a heat control knob, and a three-position snap switch. It is claimed the life of the average soldering iron is extended at least three times by the use of carefully controlled heat.

— 357 —

Floor Liner

Walter S. Nissly, 43 N. Clinton St., York, Pa. [Vol.72,p. 674]

To define traffic aisles through a plant and to keep the work in progress in proper order, the floor liner will paint a line as rapidly as the operator can walk, is easy to operate and handle, and can be moved in restricted places. It will draw a line within 1 in. of stationary objects, and any kind of paint can be used. Furthermore, the line is drawn from the side of the machine in full view of the operator. Gravity feed and easy cleaning are other features.

The paint tank has a capacity of 4 gal. The height of the

machine over-all is 41 in., and the width and length are 13 by 18 inches.

— 358 —

Floor Surfacer, "Durimit"

Durimit Floors, Inc., 27 East Water St., Cincinnati, Ohio. [Vol.72,p.505]

A hard material that may be combined with cement to produce a tough, non-cracking floor surfacing has been announced. This material, known as "Durimit," is composed of crystals and crystalloids, which according to the Mohs scale, are almost as hard as diamonds. It is said that this flooring will not check nor pit under the heaviest kind of traffic, and neither will it absorb oil nor grease. Further, it does not disintegrate under abuse.

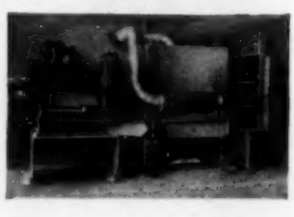
— 359 —

Flue Cleaning System, Sand Blast, "New Haven"

Joseph T. Ryerson & Sons, Inc., 16th & Rockwell Sts., Chicago, Ill. [Vol.72,p.636]

Scale can be removed from the surface and also in pitted holes in locomotive boiler flues by means of a "New Haven" sandblast flue cleaning system. Heavily pitted flues may be easily detected and rejected immediately.

This cleaner consists of five units, which are as follows: the scale-cracking unit, and sandblast cabinet, the flue puller, the dust arrester, and the exhauster. Any standard or



superheater size flue is handled, the capacity ranging from 1½- to 6-in. outside diameters. Only one flue is put through the cleaning system at a time. Two-inch flues are cleaned at the rate of one per minute, whereas 6-in. superheater flues are sand-blasted at the rate of 20 per hour. A set of guides is furnished to handle the complete range of flues from 1½ to 6 inches.

— 360 —

Gas, "Electrolene"—a Substitute for Industrial Hydrogen

General Electric Co., Schenectady, N. Y. [Vol.72,p.674]

An industrial gas called "Electrolene," claimed to be better than hydrogen for many industrial applications, can now be produced by feeding steam and city gas or other hydro-

carbons into an electric cracking device manufactured by this company. It is claimed that this gas can be made at about one-tenth the cost of hydrogen, and is of use in furnaces where the atmospheres must be controlled for heat-treating processes, and also for metal cutting and other industrial fabrication. Its flame temperature is higher than that of hydrogen.

Among other advantages claimed for this process are: the small amount of attention required; the flexibility of output, application, and operation; and production as required.

"Electrolene" is composed largely of hydrogen and carbon monoxide. Small percentages of methane and nitrogen are also present, but carbon dioxide, illuminants, and oxygen originally present in the city gas are absent from Electrolene.

— 361 —

Gasket Compound, "Nacotex"

National Cork Products Co., Inc., 1579 East Milwaukee Ave., Detroit, Mich., [Vol.72,p.471]

This gasket compound is neither a paste nor a cement, and is not affected by oil, grease, kerosene, nor water, and can be used on ammonia and gas lines. It does not crumble, break, disintegrate, or become spongy, nor will it blow out when subjected to extreme pressures. High temperatures serve only to make it more tight and permanent.

Nacotex possesses a very definite "body," which permits building up to offset surface irregularities and depressions. It sets almost instantly. The material is supplied in tubes and in pint, quart, and gallon tins.

— 362 —

Heater, Soldering-Iron, Electric

Bellevue Industrial Furnace Co., 2971 Bellevue Ave., Detroit, Mich. [Vol.72,p.431]

The No. E-1 electric soldering iron heater is of simple construction, heats quickly, and is portable. It operates on 110-volt circuits, taking 1,600 watts at 15 amp. It is furnished complete with an indicating snap switch, 10 ft. of flexible heater cord, and an attachment plug.

The over-all dimensions are 15½ in. wide by 13¾ in. high by 13¾ in. deep. The opening is 4½ in. wide by 1¾ in. high, and

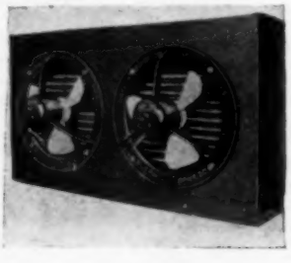
the chamber is 5 in. deep. Two 6x¾ in. "Globar" elements of the cartridge type are furnished. The heater can also be used for annealing and hardening of small parts. The finish is gray aluminum.

— 363 —

Heater, Unit, Duplex, "Breezo-Fin"

Buffalo Forge Co., Buffalo, N. Y. [Vol.72,p.969]

Lowest heating cost of the company's entire line of unit heaters is claimed for the twin "Breezo-Fin." It is also said to be quieter than single-fan heaters of equivalent capacity. When desired, one of the 16-in.



fans may be shut down. Aero-fin heating coil is used, and only one set of steam and drip connections are required.

— 364 —

Horse, Steel, Folding

Toledo Pressed Steel Co., Toledo, Ohio. [Vol.72,p.822]

A folding steel horse, utilizing standard-sized lumber as a rail, has been introduced for use in machine shops and other plants. The metal cross-mem-

ber acts as a toggle, and when this is clamped down, the jaws grip the wooden rail tightly. The jaws are toothed and bite down as well as in, binding the rail firmly on three sides, thus preventing splitting and side sway. No other bracing is required.

The legs are made from heavy gage steel in the shape of 3-in. ribbed channel sections, with all pivoted joints permanently fastened, although permitting of free and easy movement. The horses are made in sizes of 18 to 60 in. in height.

— 365 —

Insulating Board, Vibration and Sound-Proofing "Keldur"

International Products Corporation, 425 Van Buren St., Milwaukee, Wis. [Vol.72,p.783]

A resilient, rubber-like material held between layers of coarsely woven jute cloth or burlap, "Keldur," like rubber, tends to deaden noise and check vibration, but is not subject to deterioration in the presence of oil, and will not harden, according to the manufacturer. It possesses durability against mechanical and chemical disturbances and will retain its elasticity almost indefinitely.

The material can be used for either light or heavy equipment where noise and vibration are to be held at a minimum. Keldur is used for soundproofing purposes also. It comes in sheets 28x36 in. or 29½x40½ in., and in thicknesses of ¼, ½, and ¾ in. One square foot of the ½-in. material weighs 3½ pounds.

— 366 —

Lapping Compounds, "Timesaver"

Abrasive Engineering Laboratories, Inc., 117 No. Jefferson St., Chicago, Ill. [Vol.72,p.1006]

Several lapping compounds under the name of "Timesaver" are being marketed. It is claimed that the materials break down from an abrasive to a very fine polish and they will not imbed in metal surfaces. They may be used for fitting either new or reconditional bearings and produce smooth, open-pored surfaces which retain the oil film.

"Timesaver" compounds are manufactured for soft metals and for hard metals. They are packed in 1½-oz., 3-oz., and 1-, 5-, 10-, 25-, and 50-lb. containers.

— 367 —

Tractor, Industrial, "W & K"

Whitehead & Kales Co., Detroit, Mich. [Vol.72,p.205]

An industrial tractor powered by means of a standard Ford Modell AA truck motor has been placed on the market. It is spring mounted, front and

rear, and is only 8 ft. in over-all length.

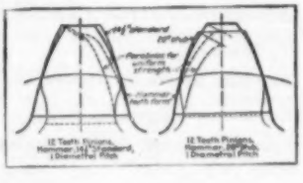
This tractor has a drawbar pull of approximately 1,500 lb. with a speed of 19.7 m.p.h. in fourth speed at 2,000 r.p.m. Its total weight is approximately 2,450 lb. It is furnished complete with battery, coupler, radiator guard, spring seat, generator and starter.

— 368 —

Tooth form, Gear, "Hammar"

Hammar Co., 17 State St., New York, N. Y. [Vol.72,p. 1047]

The system is so designed that no undercutting takes place at the base of the tooth. As a result pinions may be cut with eight teeth or less and with maximum thickness at the root of the tooth; yet they have a greater strength factor than can



be obtained with a generated tooth on any of the regular involute systems.

The radius of contour of the tooth is large, providing a proportionately larger contact strip. In operation, the tooth has greater rolling action and less slip and less wear than an ordinary tooth. The system can be adapted to gearing subject to impact loading and high pitch line velocity.

The Hammar tooth form may be manufactured on any standard gear generating machine.

— 369 —

Vacuum Cleaner, Industrial, Model 70

Breur Electric Manufacturing Co., 852 Blackhawk St., Chicago, Ill. [Vol.72,p.710]

This cleaner is designed especially for heavy-duty work in cleaning machinery, motors, overhead pipes, girders, walls, floors, and other applications. It is known as the Model 70 "Tornado," and employs an oversize ¾-hp. G.E. universal motor mounted on precision ball bearings. The motor is mounted on a cast-aluminum cover, which fits over a steel tank finished in aluminum. A special feature is the possibility of removing the motor from the cover to be used as a portable

blower. A complete set of attachments is furnished to take care of any cleaning requirement.

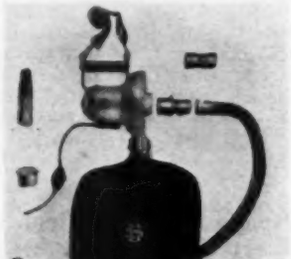
— 370 —

Vacuum Cleaner and Blower, Combination, "U. S."

United States Electrical Tool Co., Cincinnati, Ohio. [Vol. 72,p.711]

This tool not only provides a powerful suction for a vacuum cleaner, but also provides a blast of air to be used for blowing dust from machinery. The change from a vacuum cleaner to a blower is done by removal of the dust bag and changing the location of the hose.

By hanging the motor and fan over his shoulder, the operator can get into places difficult of access, and the weight of the device is not so great as to



become tiresome. The cleaner comes in two sizes. The No. 1 size weighs 7½ lb., and the No. 2 size weighs 9½ pounds.

— 371 —

Vapor Degreaser for Impervious Materials

Carrier Engineering Corporation, Newark, N. J. [Vol.72,p. 74]

In this vapor bath process for the degreasing of metals and other impervious materials, a solvent known by the trade name of "Cecolene" is boiled and vaporized. When used in the standard tank form of the apparatus, the vapor rises to the level of the water-cooled condenser coils placed around the sides and near the top of the tank, is condensed, and is precipitated to the bottom of the tank. The objects to be degreased are suspended in the vapor and kept in it until they attain its temperature in from 1½ to 3 min., the time depending upon the gage or weight of the metal or other material.

The objects being degreased do not come in contact with grease previously removed from other material.

The unit is made in standard dip tank units and in special designs. By the insertion of diversion condenser plates, the tank can be used for the rectification of Cecolene and other cleaning fluids.

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Boring and Turning Machines

—1—

Boring and Milling Machine, Horizontal, 8 7/8-Inch Spindle

Selson Engineering Co., Ltd., Hatton Garden, London, E.C., England. [Vol.72,p.88E]

Collet & Engelhard, Offenbach-on-Main, Germany, are the builders of this horizontal boring and milling machine having a spindle 8⅞ in. diam. and a boring depth in one traverse of 75 in., the greatest diameter bored being 86 in. As illustrated, the machine has a traversing upright on a stationary bed. The bed itself is 354 in. long by 86½ in. wide, the horizontal adjustment of the upright being 236 in., while the maximum and minimum heights of the spindle above the surface of the bed are 167 in. and 30 in., respectively.

The faceplate has an axial adjustment by hand of 4 in. and is 47¼ in. in diameter. A tapping device provides threads from 3½ to 12 per inch.

—2—

Boring Machine, Horizontal, with Planer-Table

Selson Engineering Co., Ltd., Hatton Garden, E.C., England. [Vol.72,p.114E]

Collet & Engelhard, Offenbach-on-Main, Germany, are the builders of this horizontal boring machine with planer-table. The machine has a supporting upright for the boring spindle, and in most respects is similar to the design of the 8¾-in. spindle machine described under the preceding item. The machine is suitable for cylinder boring and longitudinal milling, as well as ordinary horizontal boring. The machine will bore up to 24 in. in diameter and face up to 36 in. in diameter, the faceplate being 21⅛ in. in diameter.

The saddle is vertically adjustable through 55 in. The upright, like the steady, is adjustable 24 in. on the bed and the table 82 in. on its bed, the table surface being 82½ in. by 59 in. and the length being 17 in.

The drive is obtained from a 7.5-kw., variable-speed motor with automatic control. Weight, 46,200 pounds.

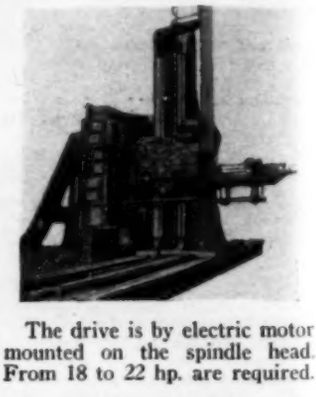
—3—

Boring and Milling Machine, Horizontal

Alfred Herbert, Ltd., Coventry, England. [Vol.72,p.133E]

Schiess-Defries A.G., Dusseldorf, Germany, build this horizontal boring and milling machine having a spindle 7½ in. in diameter and a height of 16 ft. 6 in. The column is adjustable along the bed and is suitable for boring up to 64 in.

The spindle head is totally inclosed. Spindle speeds range from 0.9 to 105 r.p.m., and the eight boring feeds range from 0.0059 in. to 0.1968 in. per rev., or to 0.63 in.



The drive is by electric motor mounted on the spindle head. From 18 to 22 hp. are required.

—4—

Boring Machine, Horizontal, 2½-Inch Spindle

Hulse & Co., Ltd., Salford, Manchester, England. [Vol.72, p.188E]

This machine will perform drilling, boring, tapping, studding, and milling work. The horizontal bed is 8 ft. long by

3 ft. 9 in. wide. The horizontal traverse is 4 feet.

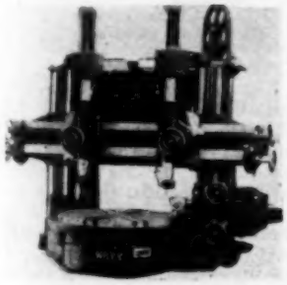
The spindle is bored No. 5 Morse taper. It has a horizontal traverse in each direction of 2 ft. 6 in. and is driven by a 7½-hp. reversible motor.

— 5 —

Boring Mill, Vertical, 8-Ft.

Deutsche Niles Werke A.G., Berlin-Weissensee, Germany. [Vol.72,p.85E]

This two-head vertical boring and turning mill has a side-head on the right-hand upright. It admits work up to 97 in. diam. by 59 in. high, the maximum turning diameter with



side-head being 91 in. The faceplate has 24 speeds, obtained through a single pulley gearbox of the column.

Each tool bar has a boring depth of 45 in. and provision for swiveling to any angle.

Power required, 22 hp.; net weight, including side support, 57,400 pounds.

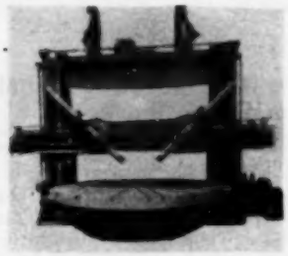
— 6 —

Boring Mill, Vertical, 16-Ft.

Craven Bros. (Manchester), Ltd., Reddish, Stockport, England. [Vol.72,p.149E]

This 16-ft. vertical boring and turning mill is one of a line of Armstrong-Whitworth type machines made by the firm and is essentially the same design.

The machine shown has a table of 192 in. diam. and will swing 194 in. between the uprights, admitting 116 in. under the cross rail, the height under



the toolholders being 108 in. The bar travel is 72 in. The table has eight speeds, from 0.54 to 10 r.p.m. and the eight feeds range from $\frac{1}{32}$ in. to 1$\frac{1}{8}$ inch.

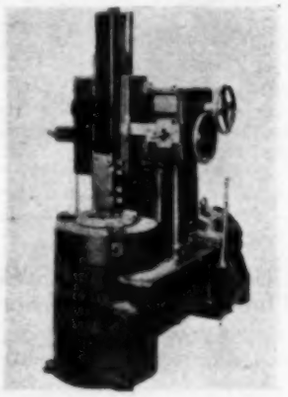
Weight, exclusive of electrical equipment, 78 tons.

— 7 —

Boring and Turning Mill, Special

Campbells and Hunter, Ltd., Leeds, England. [Vol.72,p.178E]

The box-section column of this machine is cast solid with the table base and spindle-bearing boss. Four cutting tools



are employed, two for roughing and two for finishing, and the tool end of the vertical slide is of special section to enter the wormwheel ring and allow sufficient travel for the machining operation, while a 24-in., 3-jaw chuck and a hollow spindle are also made sufficiently large for this purpose. The machine has been built especially for machining spigot recesses in phosphor-bronze wormwheels for the finer tractor transmission gears.

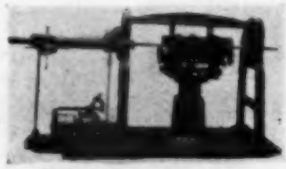
Weight, 4,500 pounds.

— 8 —

Re-Boring Machine, Automobile Crankshaft Bearing

C. Redman & Sons, Ltd., Halifax, England. [Vol.72,p.101E]

On a foundation baseplate are mounted two box-section housings, 5 ft. 6 in. apart, braced by a crossbar. Between the housings is an adjustable work table, while on the left of the baseplate is mounted the countershaft and change-feed gearbox. Both a quick hand traverse and fine hand feed are provided to the spindle. Three power feeds, namely, $\frac{1}{64}$, 1/128, and 1/192 in. per revolution, are obtained.



The minimum distance from boring spindle to table top is 6 in., maximum distance 18 in.; height of spindle from the floor line, 4 ft.; maximum traverse of spindle, 2 ft.; floor space, 13 ft. 6 in. by 4 ft. 3 in.; power required, 2 hp.; wt., 4,500 lb.

— 9 —

Re-Turning Machine, Crank-Axle, For Three Cylinder Locomotives, Portable

Beyer, Peacock & Co., Manchester, England. [Vol.72,p.176E]

This machine is designed to re-turn the center crankpin in position on 3-cylinder locomotives without removing the axle from its bearings. It is pro-

vided with centering brackets fitted with steel centers, which can be adjusted to the centers of the crankpin, thus insuring accuracy of alignment.

The circular turning slide is fitted with an adjustable toolholder.

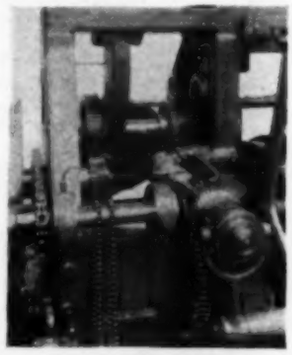
The machine will deal with crankpins 8 in. to 12 in. in diameter by 9 in. long and up to 15 in. centers of the crankthrow. The weight of the machine is 875 pounds.

— 10 —

Chucking Machine, Automatic, Four-Spindle Improved

B. S. A. Tools, Ltd., Sparkbrook, Birmingham, England. [Vol.71,p.271E]

The four-spindle automatic machines for bar and chuck work, developed by the above



concern, were described previously in Colonial edition of Nov. 26, 1927, page 188E.

These machines have been improved principally in the drive mechanism. It is now possible to change the spindle speeds by means of pick-off gears, and the pulley has been dropped and increased in size. All gears for changing the spindle speeds are inside the machine. The drive for the quick-run clutch is by means of a center-drive silent chain.

Drilling Machines

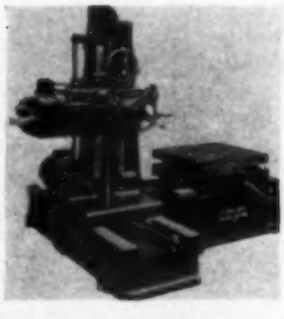
— 11 —

Drilling and Boring Machine, Horizontal, Light-Duty

Kitchen & Wade, Ltd., Halifax, England. [Vol.72,p.41E]

This motor-driven, light-duty, horizontal, drilling, boring, tapping, and studding machine will drill holes up to 2 in. in diameter from the solid, bore holes up to 6 in. in diameter, and tap up to 1¼-in. Whitworth.

The centralized-control saddle incloses all the gears. The vertical traverse, 2 ft., is by steel rack and pinion mechanism. The



feed box gives six feeds, varying from 36 to 150 cuts per in. The steel spindle will take No. 4 Morse taper, and has a hori-

zontal feed traverse of 12 in. The nine spindle speeds range from 800 to 40 r.p.m.

Drive is by a 5-hp. motor located at the rear of the machine through spiral reducing gears. An auxiliary bed placed at right angles to the main bed carries the squaring work table.

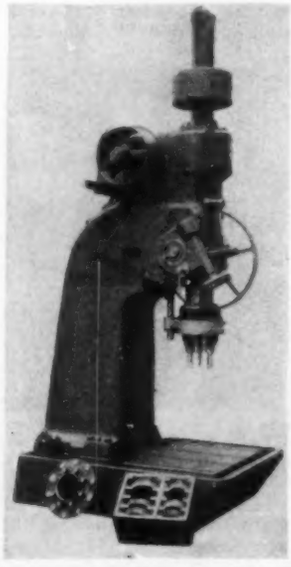
Floor space, 7 ft. by 6 ft. 6 in.; weight, 4½ tons.

— 12 —

Drilling Machine, Vertical, Manufacturing, Heavy-Duty

Alfred Herbert, Ltd., Coventry, England. [Vol.71,p.207E]

Three sizes of these vertical drilling machines designed for multiple operations are available, namely, 16, 20, and 36-inch, of which the last is illustrated. It



has an eight-spindle, adjustable drill-head taking up to eight ⅝-in. drills on a minimum pitch circle of 6¼ in. or 9¼ in. maximum. Each machine is provided with eight spindle speeds from 80 to 240 r.p.m.

Spindles are bored to take an adapter for Morse taper-shank tools. Four rates of automatic feed from 30 to 120 cuts per in. are provided.

— 13 —

Drilling Machine, Vertical

W. Asquith, Ltd., Halifax, England. [Vol.71,p.242E]

In addition to performing the usual drilling operations, this machine is adapted to carry out reaming and grinding operations on valve seatings up to 3½ in. in diameter and also to face work up to 7½ in. in diameter.

Twelve spindle speeds range from 300 to 20 r.p.m. and the four self-acting feeds are 38, 58, 83 and 120 cuts per in.

The 20-in. diameter work-

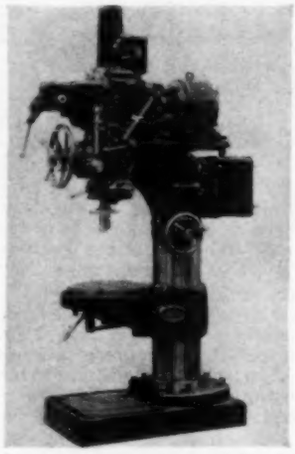


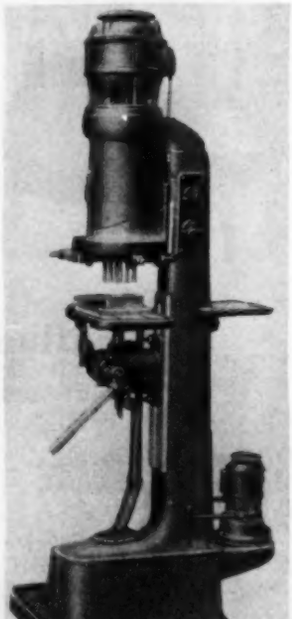
table elevates and lowers 18 in. on the column, and can be swung aside. The machine admits work 25 in. in diameter on the table. The maximum height admitted between the spindle and baseplate is 4 ft., and between the spindle and the table, 2 ft. 6 inches.

— 14 —

Drilling Machine, Vertical, Multi-Spindle, Light

S. Wolf & Co., Ltd., 115 Southwark St., London, S.E., England. [Vol.72,p.120E]

A built-in motor for the main spindle, a separate motor for the lubricating system, and an alternative body for bench use are the principal features of this light, multi-spindle drilling ma-



chine. The motor is fitted direct to the top of the spindle-head, where the transmission gears are located. The machine accommodates any number of spindles, between 2 and 13, inclusive. The speeds are 4,000 r.p.m. and 5,600 r.p.m.

Over all height of the floor-type machine is 5 ft. 10 in., the floor space, 21 by 16 in.; and the net weight, without motor, 340 pounds.

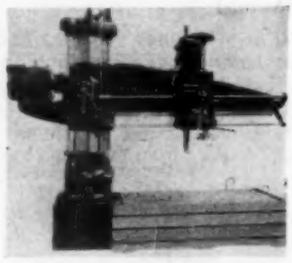
— 15 —

Drilling Machine, Radial, for Boiler Work

F. Town & Sons, Halifax, England. [Vol.71,p.222E]

This 8-ft. radial drilling, boring, tapping, and studding machine of the central-thrust type will drill holes up to 3 in. in diameter in mild-steel boiler plate. A nine-speed gearbox is mounted in front of the arm and double and single gears are located on the saddle, giving 18 spindle speeds ranging from 25 to 450 r.p.m.

The six power feeds vary from 32 to 150 cuts per in. The feed is engaged by a friction clutch, and there is an automatic



trip. Quick and fine hand feeds are also fitted. The length of feed is 18 inches.

Weight, without motor, 17,100 pounds.

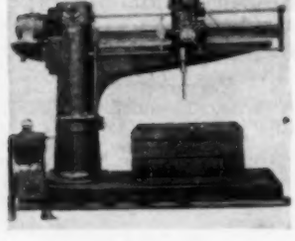
—16—

Drilling Machine, Radial, Plate and Girder, 7-Ft.

G. Swift & Sons, Ltd., Halifax, England. [Vol.71,p.283E]

This machine has direct motor drive, the pillar being mounted on a large baseplate instead of bolting direct to the floor. An improved combined locking motion is provided whereby the saddle is locked to the arm and the arm to the pillar by the movement of one lever.

The machine has four spindle speeds, and is especially adapted for repetition work. It will drill holes from ¾ in. to 1¼ in. in diam. at the center of a circle 11 ft. 9 in. in diam., the maximum distance from the spindle



nose to the base being 4 ft. 6 in., and the distance from the spindle to the top of the loose work table, 2 ft. 6 in.

The saddle travels along the arm a distance of 5 ft. 6 in. The feed box gives three geared feeds; 55, 75, and 105 cuts per in. by the movement of one lever. The four-speed gearbox on top of the arm provides spindle speeds from 190 to 480 rev. per minute.

Floor space, 10 ft. 9 in. by 3 ft. 9 in.; height, 9 ft. 9 in.; weight, 10,200 pounds.

— 17 —

Drilling Machine, Radial, 6-Ft.

W. Asquith, Ltd., Halifax, England. [Vol.72,p.54E]

The machine will drill 3-in. holes from the solid in steel, tap 3-in. Whitworth threads, and bore holes up to 10 in. in diameter.

The baseplate is 8 ft. 6 in. by 4 ft. wide by 9 in. deep and the column is of the two-diameter form.

Quick-hand-adjustment, fine hand-feed, and self-acting feed through a gearbox. The spindle speeds range from 745 to 20 r.p.m., and the feeds from 120 to 11 cuts per in.

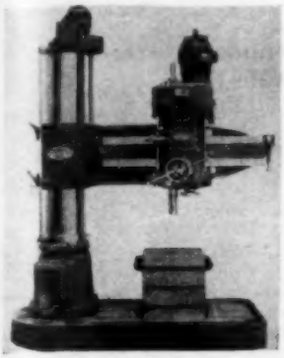
The maximum distance between the top of the baseplate and the spindle nose is 6 ft., and the minimum distance 3 ft. 3 in. The over all height is 12 ft. 6 in., the minimum radius is 1 ft. 10 in., and the approximate net weight, 10,300 pounds.

— 18 —

Drilling Machine, Radial, High-Speed, Small

Burton, Griffiths & Co., Ltd., Vauxhall Bridge Road, London, S.W., England. [Vol.72,p.103E]

Raboma Maschinenfabrik, Berlin-Borsigwalde, Germany, is the builder of this small radial drill for running at high speeds and suitable for drilling aluminum and other soft metals. Machines of this type are available with spindle radii of 32 in. and 48 in. The spindle is bored No. 4 Morse taper. With a d.c. motor 36 speeds ranging



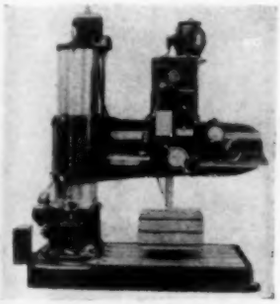
from 38 to 2,150 r.p.m. can be obtained, while with an a.c. motor twelve speeds in the same range are available.

— 19 —

Drilling Machine, Radial

Soag Machine Tools, Ltd., 45 Horseferry Road, Westminster, S.W., England. [Vol.72,p.114E]

Hermann Kolb, Köln-Ehrenfeld, Germany, is the builder of this machine, the agent being given above. Separate electric



motors are employed for drilling, raising and lowering the arm, traversing the saddle, locking the column and sleeve, and driving the pump. Machines of this type are available in a range of sizes, from 4 ft. to 13 ft.

The 36 speeds range from 19 to 1,340 r.p.m. and the 18 feeds from 0.0055 in. to 0.123 in. per rev., the constant-speed motor being of from 15 to 20 hp.

— 20 —

Drilling Machine, Radial

Kitchen & Wade, Ltd., Halifax, England. [Vol.72,p.131E]

This 2-ft. 6-in. radial drilling machine is particularly adapted for use on ships. It drills from the solid in cast iron up to 2-in. diam., and in mild steel up to 1¼ in., and will tap 1¼-in. Whitworth threads. It will also bore work up to 8 in. in diameter.

The working area of table top is 27 in. by 14½ in., side area 27 by 8 in.

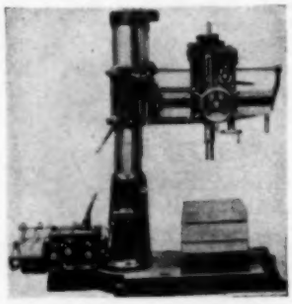
A gearbox at the top of the arm gives four speeds doubled by gears on the saddle, the speeds ranging from 500 to 30 r.p.m. Floor space is 6 ft. 6 in. by 2 ft. 4 in., and weight, 2,600 pounds.

— 21 —

Drilling Machine, Radial, 3½-Ft.

Midgley & Sutcliffe, Bradford, England. [Vol.72,p.189E]

Two sizes of this radial drill are manufactured, namely, 3½-ft. and 4-ft. radius. The machines are of the all-geared type and have positive automatic feed. Reverse motion is obtained through a friction clutch, making the machine suitable for tapping and studding. Eight spindle speeds range from 21 to 450 r.p.m. Except for the maximum radius, the two models are of the same dimensions, the minimum radius being 1 ft. 4 in., the arm elevation by power 30 in., and the spindle feed 10 in., the maximum distance of the spindle to high bed being 33 in., or to a low base, 51 in.



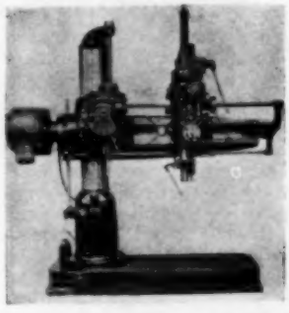
The working surface of the bed in the smaller machine is 37 in. by 30 in. and in the larger unit 43 in. by 30 in. Capacity is 2 in. in cast iron and 1¼ in. in mild steel.

— 22 —

Drilling Machine, Radial, Motor-Driven, 4½-Ft.

G. Swift & Sons, Ltd., Halifax, England. [Vol.72,p.215E]

This 4½-ft. radial drill will drill holes up to 2¼ in. in cast iron or 2 in. in mild steel, and will tap 1¼-in. Whitworth threads and 2¼-in. gas threads. The spindle has a vertical traverse of 15 in. and is bored to No. 4 Morse taper and cottered to receive boring, bars, tapping attachments, and sim-



ilar tools. Power and hand feeds are provided, together with quick advance and return and reverse motion for tapping.

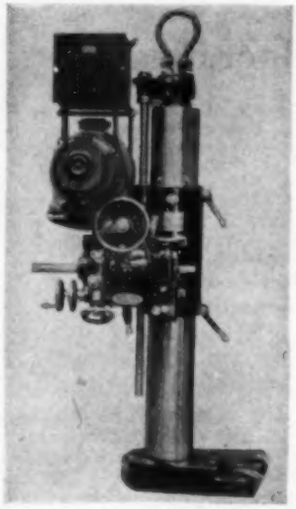
Weight, 7,700 pounds.

— 23 —

Drilling Machine, Special, Portable, for Rotor Casings

W. Asquith, Ltd., Halifax, England. [Vol.72,p.188E]

This portable horizontal drilling machine is employed for drilling and tapping holes internally in rotor casings ranging from 4 to 10 ft. in diameter. The drilling head is arranged



for mounting on a traverse bed, fitted to a large turntable, both being supplied by the customer. The column is 11 in. in diameter..

The base of the machine is adjustable on the traverse bed by hand ratchet gear. Four rates of self-acting feed up to 12 in. traverse are available. A 3-hp. variable-speed motor and six-speed gearbox give a speed range from 650 to 36 r.p.m.

Total height, 8 ft. 3 in.; weight, 3,000 pounds.

— 24 —

Drill, Electric, Hand-Operated

The Electrical Equipment and Carbon Co., Ltd., Bank Buildings, New Oxford St., London, W.C., England. [Vol. 71,p.254E]

The above concern is agent for a small hand-operated electric drilling machine, which has a capacity in steel of ¼ in. The drill is driven by a universal motor with self-aligning bearings, the motor itself being cased in rubber-free insulating material. A spirit level placed

on top of the drill housing is an aid to accuracy in working. The machine takes about 10 watts. Chucks with a capacity up to 5/32 in. can be used. The handgrip can be removed. The diameter is 2¼ in., the total length 9¼ in., and the total weight, including the chuck, 2 lb. 2 ounces.

— 25 —

Drill, Pneumatic, 1¼-Inch

Globe Pneumatic Engineering Co., Ltd., 1 Victoria St., Westminster, S.W., England. [Vol. 72,p.39E]

Roller bearings are fitted to each connecting rod of this pneumatic drill, and ball bearings for the crankshaft are set close together to eliminate whip.

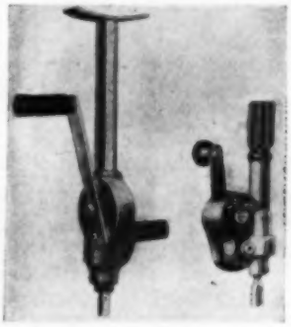
The cylinders are set at 90 deg., whereby dynamic balance is obtained without the use of balance weights. The gear ratio is designed for average work, the gears being of heat-treated nickel steel. The drilling capacity is 1¼ in. in steel. The drill socket has a No. 3 Morse taper. Net weight, 14½ pounds.

— 26 —

Drill, Hand, Percussion

Fry's (London) Ltd., 24, Water Lane, London, E.C., England. [Vol.72,p.132E]

This percussion drill is made in two styles; that is, a breast drill, and one with an ordinary handle. Blows are delivered by



rotation of the handle, which causes the spindle to rise and descend under the action of a spring. At the same time the drill is rotated at a suitable speed. The tool is especially designed for boring stone, concrete, and similar materials.

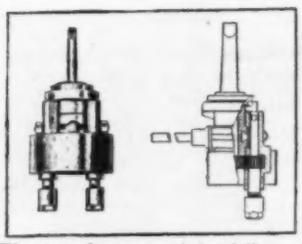
The working parts are inclosed in a dust-proof casing and the drills are quickly interchanged. The breast model is about 16 in. long and weighs 5¾ lb., the hand tool being 9½ in. long and weighing about 2¾ lb. Special drills are used and are available in sizes ranging from 3/32 to ¼ inch.

— 27 —

Drilling Attachment, Two-Spindle

John Ackworthie, Ltd., Coleshill St., Birmingham, England. [Vol.72,p.41E]

The spindle centers may range from ⅜ to 2 in. and the attachment will drill holes up to ¼ in. in diameter. The design is compact. Excluding the taper shank, the device is 5½ in. long.



The attachment weighs 4 lb. and can be supplied with Nos. 1 and 2 Morse shanks.

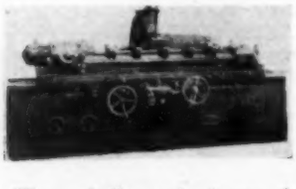
Grinding Machines

— 28 —

Grinder, Cylindrical and Plunge-Cut, Hydraulic

G. H. Alexander Machinery, Ltd., Birmingham, England. [Vol.72,p.116E]

Ludw. Loewe & Co., Berlin, Germany, are builders of this cylindrical and plunge-cut grinder, which with rests will grind 5½ in. in diam., or without rests, 10⅞ in. diam. by 59 in.



The grinding wheel may be 31½ in. or 35½ in. diam. by 4⅞ in. to 8⅞ in. wide, running at 760 and 894 r.p.m. Table speeds can be regulated as required from zero to 40 ft. per min.

The feed, from 0 to 0.0039 in., is automatic, and operated hydraulically. Both the cylindrical and plunge-cut grinding methods may be employed.

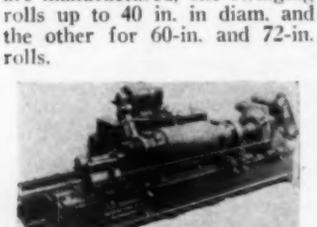
The main drive is by a 30-hp., slip-ring, flange motor. Floor space required, 167 by 79 inches.

— 29 —

Grinder, Roll, Large

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.72,p.150E]

Two roll-grinding machines are manufactured, one swinging rolls up to 40 in. in diam. and the other for 60-in. and 72-in. rolls.



On the smaller machine the maximum diameter ground with the full-size wheel is 34 in., and the minimum 2 in. The standard grinding wheel is 26 in. in diam. by 3 in. wide. Cross traverse of the wheelhead is 16 in. Two wheel speeds are provided and four work speeds.

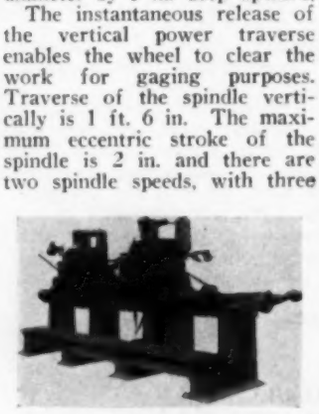
— 30 —

Grinder, Hole, Double-Head for Locomotive Works

Beyer, Peacock & Co., Ltd., Gorton, Manchester, England. [Vol.71,p.221E]

The improved double-head hole grinder is now suitable both for internal grinding and for service grinding. The machine will grind a hole ⅞ in. in diameter by 5 in. deep upward.

The instantaneous release of the vertical power traverse enables the wheel to clear the work for gaging purposes. Traverse of the spindle vertically is 1 ft. 6 in. The maximum eccentric stroke of the spindle is 2 in. and there are two spindle speeds, with three



vertical and two longitudinal traverse speeds.

The maximum distance between the grinding heads on the bed is 12 ft. 6 in. and the minimum distance, 1 ft. 4 in. Each head is independently driven and operated.

Net weight of machine, 13,500 lb.; floor space, 18 ft. 9 in. by 6 ft. 8 in., and motor required, 10 horsepower.

— 31 —

Grinder, Internal and Face

Fortuna Werke, A.G., Stuttgart-Cannstatt, Germany. [Vol. 72,p.70]

Hydraulic table feeds range from 0 to 39 ft. per minute, and the machine will take work 7 in. in diameter with the water guard or 9 in. diameter without the guard. The largest diameter possible for light work is 11 in. The maximum grinding depth is 8 in., and with an automatic infeed stop, the actual hole diameter is indicated by Hirth Minimeter.

The cup wheel taken is 6¼ in. in diameter by 1½ in. wide; the work spindle has four speeds; the cup wheel one speed, and the internal grinding wheel two speeds. Between 3 and 4 hp. are required.

Floor space, 6 ft. 4 in. by 3 ft. 2 in.; net weight, 2,100 pounds.

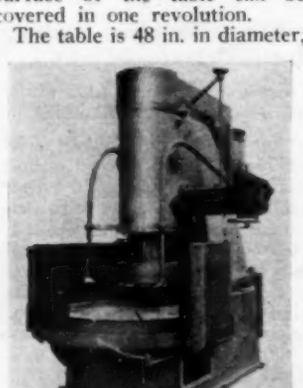
— 32 —

Grinder, Surface, Rotary-Table

Alfred Herbert & Co., Ltd., Coventry, England. [Vol.71,p. 294E]

This machine, built by the Lumsden Machine Co., Ltd., Gateshead and marketed by the above concern, is of the rotating-table, vertical-wheel-spindle type, the segmental grinding wheel having a diameter half that of the table; thus the full surface of the table can be covered in one revolution.

The table is 48 in. in diameter,



taking a 48-in. magnetic chuck, the capacity inside the water guard being 58 in., and the grinding wheel has 12 segments.

The drive is by 40-hp. ball-bearing motor mounted vertically on the machine at the back and driving by belt to the main spindle. The table drive is by means of a 2-hp. auxiliary motor, with change-speed gearbox for the table speeds, which are 2 and 12 r.p.m. The range of feeds is from 0.003 in. to 0.03 in. per min.

Floor space, 8 ft. 6 in. by 10 ft.; weight, 9½ tons.

— 33 —

Grinder, Surface, Table-Type

Oldfield & Schofield Co., Ltd., Boothtown, Halifax, England. [Vol.72,p.83E]

This table-type surface-grinding machine is of the vertical-spindle inverted type, with an adjustable center table. It is built in three standard sizes with grinding wheels 8 in., 12 in., and 16 in. in diam., respectively. The largest machine is illustrated. The table is 2 ft. 10 in. square and incloses the 16-in. cup-shaped grinding wheel

Floor space, 4 ft. 1 in. by 2 ft. 10 in.; weight, 1,200 lb.

— 34 —

Grinder, Surface, Vertical-Spindle, Heavy-Duty

Selson Engineering Co., Ltd., Hatton Garden, London, E.C., England. [Vol.72,p.102E]

This large size surface grinder has been built by Naxos-Union, Frankfurt-on-Main, Germany. It has a vertical grinding

spindle and a table of the planer type, 157½ in. long by 47½ in. wide, with a segmental wheel of 55 in. diameter.

For fine feed the grinding support is vertically adjustable through 2¾ in. The feed can be adjusted from 0.0004 in. The automatic wheel feed is effected on each reverse of the table travel by means of a magnet and can be varied from 0.005 in. to 0.000 in.

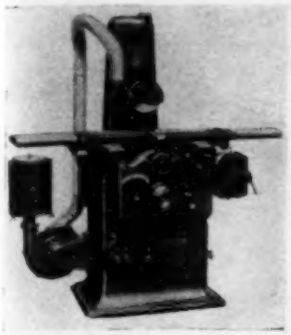
Weight, 28 tons.

— 35 —

Grinder, Surface, Horizontal, Precision, Oil-Operated

Alfred Herbert, Ltd., Coventry, England. [Vol.72,p.106E]

Samsonwerk G.m.b.H., Berlin, Germany, build this surface grinding machine with oil-operated table, which can be



used both as a high-production and precision surface grinder. The chief features are the hydraulic drive and the grinding-wheel spindle bearing. The machine is built in two sizes, the smaller with a work table 24 by 8 in., and the larger with a table 40 by 8 in., the maximum grinding length and width corresponding. The floor space occupied by the smaller unit is 7 ft. 5 in. by 4 ft. and the larger 10 ft. by 4 ft. Net weights are 2,156 and 2,398 lb., respectively.

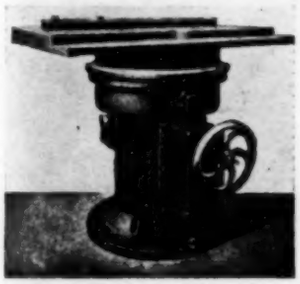
— 36 —

Grinders, Surface, Wet and Dry

Soag Machine Tools, Ltd., 45 Horseferry Road, London, S.W., England. [Vol.72,p.176E]

The dry grinding machine is driven by a direct-connected 3-hp. motor, giving a spindle speed of 1,500 r.p.m. No fixing of the work is required, the job being merely passed over the table in contact with the grinding wheel.

The table is built in halves to allow rough- and finish-grinding to be done on the same ring-wheel.



The wet grinding machine has a similar table and wheel.

Weight of dry machine is 1,385 lb.; the wet machine, 1,450 pounds.

— 37 —

Grinder, Planer-Type, Electric

John Lund, Crosshills, near Keighley, England. [Vol.72,p.203E]

This totally inclosed, planer-type grinding machine is of the all-electric type, the only operating controls being push-buttons and handwheel for setting the wheel cut in front.

The unit is of the fixed-height, cross-slide type, admitting 15 in. under the grinding wheel. The working capacity of the table is 8 ft. long by 5 ft. 6 in. wide.

The grinding head is controlled for cross traverse by a large-diameter screw and nut coupled to a wormwheel and direct-coupled 5-hp. motor. The cross traverse is controlled by limit switches and dogs on the slide. The fine feed for the grinding wheel is controlled by a large handwheel from the cross slide, the total adjustment being 14 in. The segmental grinding wheel is 25 in. in diameter, running at 5,000 ft. per min. periphery speed.

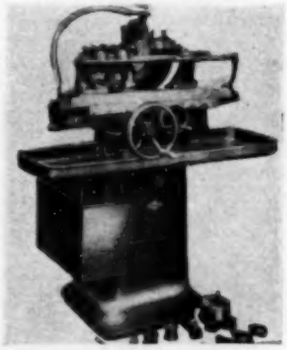
The machine weighs approximately 20 tons, and the floor space occupied is 24 ft. long by 10 ft. wide.

— 38 —

Grinder, Universal and Cutter, Improved

Morton & Weaver, Coventry, England. [Vol.71,p.254E]

The back slide for the machine has been increased in size and the travel of the wheelhead has been increased by about 3 in., adding considerably to the range.



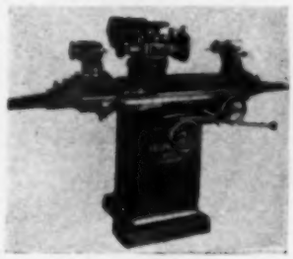
The work table is in two parts, the lower having longitudinal movement, while the upper half swivels. The maximum distance between centers is 16½ in.; the height from the table to the centers, 4½ in.; the traverse of the table, 15 in.; the traverse of the cross-slide, 5½ in.; the floor space occupied, 48 in. by 32 in., and the weight 500 pounds.

— 39 —

Grinder, Tool and Cutter

L. Kellenberger & Co., St. Gall, Switzerland. [Vol.72,p.114E]

This tool and cutter grinder can also be used as a universal machine with attachments for cylindrical, internal, and surface grinding. The grinding headstock can also be removed for use on lathes and other machines.



A ½-hp. motor is mounted on the headstock. The maximum distance between centers is 29½ in.; the height of centers is 6 in.; the maximum swing over the table, 12½ in.; movement of the table by hand, 28½ in.; vertical adjustment of the grinding headstock, 12 in.; cross movement, 15 in., and table swivels to 90 deg.

Floor space, 100 by 62½ in.; weight, 1,230 pounds.

— 40 —

Regrinding Machines for Railway Axle Journals

Churchill Machine Tool Co., Ltd., Broadheath, near Manchester, England. [Vol.71,p.204E]

These two axle-regrinding machines of similar construction are both suitable for grinding simultaneously the inside journals of locomotive driving wheel axles with the wheels in position. Both machines are also designed so that the outside journals of tender and carriage and wagon axles can be ground singly, and one type can, in addition, grind the outside journals of locomotive driving wheels of the outside-crank type.

Both machines will swing 90 in., and can be built to suit any gage. The maximum diameter of the axle journals ground is 13 in.

The first machine weighs 21 tons.

The second model has two separate box beds, one being similar to that in the preceding machine, and an outside bed carrying a single wheelhead on which is mounted a 40-in. grinding wheel and also the tailstock. The net weight of this machine is about 23 tons.

— 41 —

Grinder, Hob, Hydraulically Operated

Müller & Montag, Leipzig, Germany. [Vol.72,p.103E]

Hobs up to 10½ in. in diameter by 15¾ in. long are taken in this grinder, the maximum helix angle being 45 deg. and the distance between centers 24½ in. For small shops the machine here illustrated can also be used as a surface grinder, the table being 48 in. long by 9½ in. wide. Its longitudinal movement is 20½ in., the cross movement of the grinding wheelhead being 10½ in. The table is driven hydraulically at any speed between zero and 20 ft. per min.

Means are provided for automatically taking up backlash, so that hobs can be ground with both forward and reverse strokes. The wheel used is 6¾ in. in diameter and runs at 2,800 r.p.m.

— 42 —

Grinder, Locomotive-Frame

Dowding & Dickinson, Westminster, London, S.W., England. [Vol.72,p.135E]

Mayer & Schmidt, Offenbach-on-Main, Germany, have built this machine for grinding axle-box guides in locomotive frames.

Each grinding spindle carries two segmental wheels 11¾ in. in diameter.

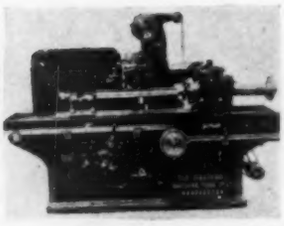
— 43 —

Grinder, Spline-Shaft, Automatic

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.72,p.177E]

On these manufacturing-type machines, the spline shafts are indexed for each cut. The machines have a box-shaped body carrying a flat reciprocating worktable with an upright at the rear, carrying a vertical sliding head with a horizontal spindle on the end of which the grinding wheels are mounted.

The three sizes in which the machine is made have automatic



traverses to the table of 22 in., 36 in., and 64 in., respectively, the center height of the work-heads being 4 in., 6½ in., and 6½ in., respectively.

— 44 —

Grinder, Fettling, Electric, High-Speed

Pneulec, Ltd., Smethwick, Birmingham, England. [Vol. 72,p.22E]

This electric fettling grinder has been produced to meet requirements of high-speed grinding and has the wheel rotating

at right angles to the frame of the machine. Drive is by a 5-hp. totally inclosed motor.

— 45 —

Grinders, Swing-Frame, Improved

Wilkinson, Bentley & Co., Ltd., Campo Lane, Sheffield, England. [Vol.72,p.68E]

The "Wilbent" standard No. 1A swing-frame grinder is provided with a dust-extracting plant.

All grinding wheels from 8 to 16 in. in diam., with

faces up to 4 in. wide, can be accommodated, at surface speeds of 5,000 ft. per minute.

The suspended radial type machine takes high-speed wheels running up to 10,000 ft. per minute and is made of steel throughout. It carries its own motor fixed at the end of a main supporting shaft. This machine can work in a full circle and cover an area up to 20 ft. in diameter. Wheels up to 16 in. or 20 in. in diameter are taken with a face of 3 inches.

— 46 —

Grinding Fixtures for Cutters

English Steel Corporation, Ltd., Sheffield, England. [Vol. 71,p.285E]

The cutting tools described under item 127 of this section are of somewhat special form, and to grind them, the above concern supplies the illustrated fixture. This can be secured to the table of any plain or uni-

versal grinding machine, the cutter being held by the pin hole and presented to the periphery of the wheel which, depending on the size of the cutter and the angle required, should be from 6 in. to 2 in. in diameter by ½ in. wide.

The cutter is secured by simply slipping it on the mandrel of the appliance and giving the handwheel a slight turn.

Lathes

— 47 —

Lathe, Center, Flange-Motor-Driven, 8½-Inch

Dean, Smith & Grace, Ltd., Keighley, England. [Vol.71, p.191E]

These 8½-in. center lathes are driven by flange motors with self-contained switchgear. An

automatic starter with overload, reversing, and inching clapper is operated from push buttons near the front end of the headstock. The 12 spindle speeds are obtained by means of sliding gears and the firm's toggle friction clutch on the spindle, the range being from 19 to 418 r.p.m. The spindle nose has a large solid flange to which chucks or face-plates may be bolted, and the hole through is 3⅜ in. in diameter.

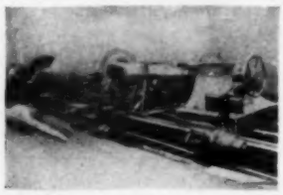
The firm's standard gearbox provides four feeds, 48 to 12 cuts or 96 to 24 cuts per in., which may be reversed from the saddle. In other respects the saddle, rests, and apron are of the firm's standard construction.

— 48 —

Lathe, Center, 30-Inch Radius

Craven Brothers (Manchester), Ltd., South Reddish, Stockport, England. [Vol.21,p. 206E]

A 30-in. Shanks-type center lathe to swing 47 in. over the saddles and to take 30 ft. between centers has been built. It is driven by a main motor of 45 hp. of the variable-speed type



with three auxiliary motors, each of 2½ hp. and running at 2,000 r.p.m. It also has a double-slide bed, the width being 6 ft. 6 in., and the bed being built in two lengths. With four gear changes in the headstock, 80 spindle-speeds are available.

Net weight, without motors, 36 tons.

— 49 —

Lathes, Center

Dowdings' Machine Tool Co., Ltd., Albert Embankment, London, S.E., England. [Vol.71,p. 244E]

These machines are manufactured by the Oerlikon Machine Tool Works, Oerlikon, Germany, and are sold by the above concern in Great Britain. They are available with either cone-

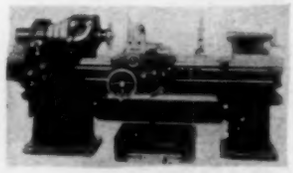
pulley or all-geared heads, the heights of centers being from 7½ to 17 in. for the cone-pulley machines and from 7½ to 21 in. for the all-geared types. The lengths of the bed range up to a maximum for the largest all-geared head lathe which will admit 26 ft. 3 in. between centers, and for each center height a number of bed lengths are available.

— 50 —

Lathe, Center for Tungsten Carbide

G. H. Alexander Machinery, Ltd., Birmingham, England. [Vol.72,p.84E]

This special lathe designed for using "Widia" cutting tools, built by Ludw. Loewe & Co. A. G., Berlin, Germany, is a plain unit designed to run con-



stantly at the necessary speeds and to have the necessary rigidity. It is of 6½-in height of centers, swinging 14⅜ in. diam. over the bed and 7½ in. over the carriage, the distance between centers being 15¾ in., 23⅝ in., or 39⅜ in., according to the bed used.

A motor with changeable pole connections is used, and without changing the belt, spindle speeds ranging from 48 to 1,200 r.p.m. can be obtained. The feed box employed is made in two types, including a simplified box with nine feeds, longitudinal or transverse, controlled by two levers. The other type is for all standardized metric, Whitworth, and module threads, with 36 feeds, longitudinal and transverse.

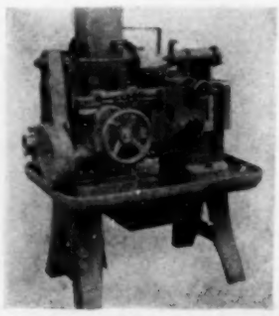
Floor space, 70 by 32 in. or 42 in.; power required, 3 to 5 horsepower.

— 51 —

Lathe, Multi-Tool, Production

B.S.A. Tools, Ltd., Birmingham, England. [Vol.72,p.40E]

This machine is an adaptation of the concern's form turning and facing lathe, but is of smaller capacity. The maxi-



mum swing is 8 in. in diameter, the distance between centers 6 in., the working stroke of saddle 6 in., and the maximum travel both of front and rear cross-slide 3¼ in. Turning and facing can be done simultaneously, the multiple tool boxes enabling the machining time to be reduced considerably.

A plain headstock is provided with a single flanged pulley for belt drive, the headstock speeds being 200 to 800 r.p.m. A constantly running shaft at the front of the machine, with drop worm, provides the feed. Pick-off gears provide a feed of 0.009 in. per rev. of the spindle, but by a simple change of gears, feeds of 0.003 in., 0.006 in. and 0.009 in. can be obtained at the front, and the same feeds or multiples or sub-multiples for the rear tools.

— 52 —

Lathe, Multi-Tool, Semi-Automatic

Benrath Machine Tools, Manchester, England. [Vol.72,p. 86E]

This multi-tool lathe, built by Gebr. Heinemann A.G., St. Georgen, Germany, is of 6¾ in. by 13¾ in. capacity. The lathe has roller bearings for the headstock spindle, which can be run at 1,200 r.p.m.

For the quick power motion of the slides, a special motor

is arranged at the back of the machine and drives the oil pump at the same time. The tailstock spindle is actuated automatically by a compressed-air cylinder. One of the main features is the electrical connection between the rotation of the spindle and the feed-engaging levers.

— 53 —

Lathe, Multi-Cut, Shaft-Turning

Heidenreich & Harbeck, Hamburg, Germany. [Vol.72,p.69E]

This multicut lathe for shaft turning is of 4¾ in. height of centers, the maximum diameter shaft admitted being 4 in., while the distance between centers may be from 3 ft. 4 in. to 6 ft. 6 in., according to bed employed, which is available in three standard lengths. The spindle has eight speeds ranging

from 52 to 293 r.p.m., and the six feeds range from 0.0066 in. to 0.04 in. per revolution.

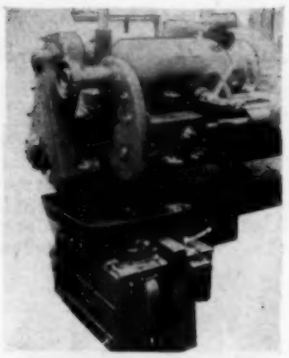
For narrowly-spaced shoulders, a multiple toolpost is available. A copying attachment consisting of one or more toolposts which move along a former bar enables curves and tapers to be turned.

— 54 —

Lathe, Capstan, Variable-Speed Drive

Alfred Herbert, Ltd., Coventry, England. [Vol.71,p.193E]

The No. 4 capstan lathes built by the above company have been fitted with a d.c., variable-speed motor and speed regulator to give a large number of spindle speeds between



any two standard gear speeds.

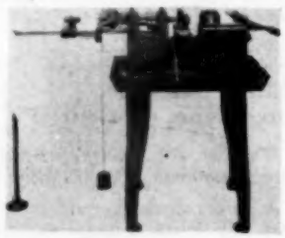
Standard spindle speeds can be extended from 30 to 500 r.p.m., thus they may range from 30 to 766 r.p.m., or from 511 down to 15 r.p.m.

— 55 —

Lathe, Capstan, 4-Inch Center, Improved

Charles Taylor (Birmingham), Ltd., Birmingham, England. [Vol.71,p.242E]

This redesigned machine takes ⅞ in. diameter through the automatic chuck or ¾ in. through the spindle, the bed being 2 ft. long. Maximum working stroke of the capstan is 3 in.; maximum



longitudinal distance between the tools on the cut-off slide, 2¾ in., and the stroke of the cutting off slide, 4 in. The headstock is now cast integral with the bed, and the length of the working stroke is adjustable.

Weight, with countershaft, 400 pounds.

— 56 —

Lathe, Turret, Flat, Multi-Cut

A. C. Wickman, Ltd., Coventry, England. [Vol.71,p.296E]

The Scheu flat turret lathe for bar and chuck work is available in two sizes and four styles. The smaller machine has a bar capacity of 2 in. in diameter, a swing of 17½ in. in diameter over the bed, and turning length of 20 in. The larger machine has a bar capacity of 2¾ in., a swing over the bed of 20 in., and a turning

length of 28 in. Each machine can be had with a flat turret only, this having either longitudinal traverse or both longitudinal and cross traverse, and in each case the machine is available with, in addition, a side carriage bearing a square turret and with longitudinal and cross feeds.

The feedbox on the larger machine provides six reversible feeds, the smaller machine having eight. In the smaller machine, the maximum swing over the side carriage is 13 in., the traverse of the flat turret is 5 in. and of the side carriage 6 inches.

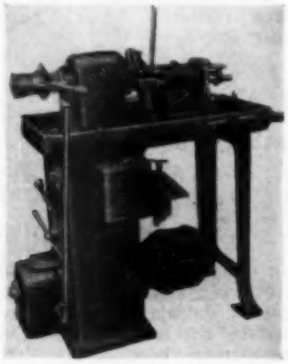
In the larger machine, the maximum swing over the side carriage is 16 in.; the traverse of the flat turret, 6½ in.; of the side carriage, 7½ inches.

— 57 —

Lathe, Turret, Precision, Flange-Motor

S. Wolf & Co., Ltd., 115, Southwark St., London, S.E., England. [Vol.72,p.8E]

This machine is a standard lathe with a hollow spindle of 1⅛ in. capacity and a turning length of 3⅛ in. The motor is flanged to the inner side of the cabinet leg, the driving mechanism being partly contained in the cabinet and partly in the



gearbox carried on the left side of the cabinet. The object of the arrangement is to provide a handy reversing gear.

The direction of rotation is opposite to that normally employed; thus, for tapping, the turning speeds can be used for quick withdrawing, the slower reverse being used for cutting. Different speed combinations are available according to the material to be worked. The speeds range from 630 to 2,880 rev. per minute.

Weight, with electrical equipment, 1,036 pounds.

— 58 —

Lathe, Turret, Universal

Benrath Machine Tools, Manchester, England. [Vol.72,p. 56E]

Gebr. Heinemann A.G., St. Georgen, Germany, is the builder of this turret lathe, which has 6¾ in. height of centers, the hole through the spindle being 2 7/32 in., the swing over the cross-slide guides, 16¾ in. in diameter, over the cross-slide without rear toolpost, 12 13/16 in. in diameter, or with the rear toolpost, 9 7/16 in. in diameter. The maximum distance between the chuck and the turret is 28¼ in., and the maximum boring length with boring bar 7¾ in. The machine may have either 10 spindle speeds ranging from 40 to 500 r.p.m. or 20 speeds ranging from 56 to 700 r.p.m.,

according to the drive. An electric motor of 5 hp. is required. The cross-slide and turret feeds range from 0.005 in. to 0.066 inch.

The longitudinal movement has six stops with fine adjustment, and the cross movement has two stops for the automatic tripping of the feeds. A screw-cutting attachment can be fitted

— 59 —

Lathe, Turret, with Hydraulic Headstock

Dowding & Dickinson, Greycoat St., London, S.W., England. [Vol.72,p.117E]

Magdeburger Werkzeugmaschinenfabrik, Magdeburg, Germany, is the builder of this turret lathe equipped with a hydraulic headstock or triple back-gearing. The lathe has height of centers of 9¾ in., swinging 20¾ in. in diameter over the bed and 15 in. over the saddle, the spindle being bored

3⅛ in. and the number of speeds with triple-gear drive 18, from 12 to 600 r.p.m., while with the hydraulic head any speed between 10 and 1,200 r.p.m. can be obtained.

Both the square and hexagonal turrets have twelve feeds.

When the sliding gear headstock is used, triple back-gearing, controlled by three levers, provides the eighteen reversible spindle speeds.

With the hydraulic headstock, between the driving shaft of the Lauf-Thoma gear and the main spindle, either of two backgears may be engaged. The hydraulic gear has an instantaneous reverse valve and is protected by a safety valve.

Front and rear slides are provided for receiving the square

turret, cutting-off or multiple toolholders.

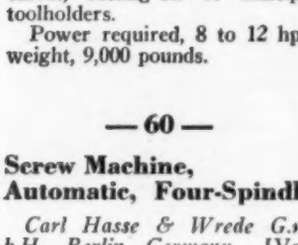
Power required, 8 to 12 hp.; weight, 9,000 pounds.

— 60 —

Screw Machine, Automatic, Four-Spindle

Carl Hasse & Wrede G.m. b.H., Berlin, Germany. [Vol. 72,p.104E]

The principal dimensions of this four-spindle automatic are as follows: Bore of stock feed tube 1⅛ in.; maximum turning length 5¼ in.; distance from center of spindle to setting-up



surfaces of toolrests 1¾ in.; spindle speeds in nine rates from 250 to 1,250 r.p.m., and number of feeds 18, power required 4 to 8 hp.

The four work spindles can be moved on guides to the left of the machine without dismounting.

The main control spindle is mounted behind the machine and rapid interchange is possible of the cams for the revolving toolbox and the transverse slides.

— 61 —

Screw Machine, Automatic, Motor-Driven

Joseph Petermann, Moutier, Switzerland. [Vol.72,p.132E]

This automatic screw machine having self-contained motor drive will take brass stock up to 12 mm. in diameter, and steel stock up to 10 mm. in diameter, turning lengths up to 80 mm. The features include a ball bearing spindle with speeds to 5,000 r.p.m. The spindle for the

threading attachment runs at a higher speed.

The motor is flanged to the side of the machine and drives the main shaft through a clutch. The secondary shaft is driven by a belt through the V-stepped cone, and the camshaft is driven direct from the main shaft through bevel gearing and change gears, and finally by belt. This arrangement permits 36 changes, ranging from 1.6 to 41 r.p.m.

The largest threading diameter is 7 mm. in steel and 12 mm. in brass. The space occupied is 4 ft. 11 in. by 2 ft. 3 in.

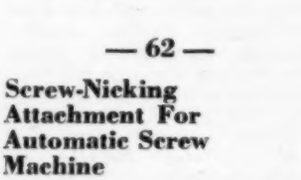
Net weight, without motor, is 1,425 pounds.

— 62 —

Screw-Nicking Attachment For Automatic Screw Machine

A. Butterworth & Co., Rochdale, England. [Vol.71,p.209E]

The company's ¾-in. automatic screw machine can now be supplied with a self-contained attachment for nicking the heads of screws. It is bolted to a standard machined face at



the back of the bed. Drive to the attachment is by means of a chain wheel clamped on the main camshaft, equal gears being employed.

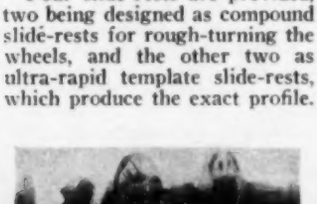
— 63 —

Lathe, Wheel

Wilhelm Hegenscheidt, A.G., Ratibor, Germany. [Vol.72,p. 55E]

This locomotive wheel lathe can take the wheels together with the cranks in such a way that the outside cranks are covered by the faceplates, so that the distance between the faceplate and the wheel need only be about 9⅞ in. The arrangement is such that when the headstock and tailstock are moved away from each other by electric motors to release the wheels, the dead centers only open out to the depth of the center holes.

Four slide-rests are provided, two being designed as compound slide-rests for rough-turning the wheels, and the other two as ultra-rapid template slide-rests, which produce the exact profile.



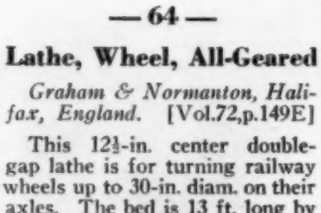
The capacity of this wheel lathe is up to 4 ft. 6 in. It takes 12 sets per working day.

— 64 —

Lathe, Wheel, All-Geared

Graham & Normanton, Halifax, England. [Vol.72,p.149E]

This 12½-in. center double-gap lathe is for turning railway wheels up to 30-in. diam. on their axles. The bed is 13 ft. long by 20 in. wide. A half-gap is fitted at the driving headstock end and



a full gap for the second gap at the loose headstock end. In all, three gages of wheels can be trued.

The bed carries two saddles with compound slide-rests, each complete with sliding, surfacing, and thread-cutting motions. The all-geared headstock provides 18 spindle speeds in geometrical progression, ranging from 9 to 461 r.p.m. It is arranged for direct motor drive.

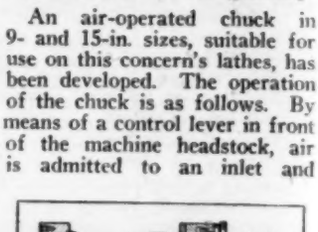
Floor space, 18 ft. by 5 ft. 3 in. Weight, including electrical equipment, 7 tons.

— 65 —

Chucks, Lathe, Pneumatic

Alfred Herbert, Ltd., Coventry, England. [Vol.71,p.284E]

An air-operated chuck in 9- and 15-in. sizes, suitable for use on this concern's lathes, has been developed. The operation of the chuck is as follows. By means of a control lever in front of the machine headstock, air is admitted to an inlet and



passed to the front of the air cylinder, forcing back the piston and rod. In this way the levers are actuated through a sleeve at the front end of the spindle and the chuck jaws are closed.

The air cylinder is carried at the back of the spindle and the pressure required is 80 lb. per sq.in. for average work or 40 lb. for work liable to distortion by gripping.

Milling Machines

— 66 —

Milling Machine, Knee-Type, All-Geared

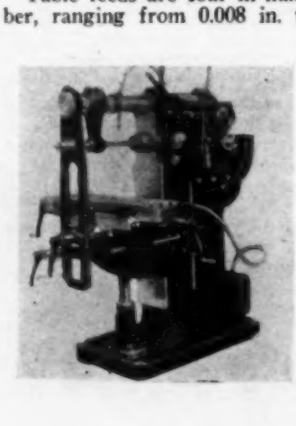
Midgley & Sutcliffe, Bradford, England. [Vol.72,p.84E]

A table working surface of 29 in. by 9½ in. is found on this all-geared milling machine. The table has three slots, each ½ in. wide, and the self-acting feed is 20 in., the to-and-fro traverse being 7½ in., and the maximum distance between the spindle and the table 17 in. The largest cutter, usable is 13 in. in diam.

The six spindle speeds range from 35 to 350 r.p.m. The spindle is a high-carbon steel forging running in phosphor-bronze bearings. The spindle socket is bored No. 10 B.&S. taper. The hole through the spindle will receive a drawbolt to secure the cutter arbor.

Table feeds are four in number, ranging from 0.008 in. to 0.034 in., and are positively driven through hardened steel gears inclosed in the column. Feeds are engaged or disengaged from the front of the knee by a lever which provides trip motion. The knee has a telescopic elevating screw.

Power required, 2½ hp.; floor space, 64 in. by 78 in.; weight, 2,000 pounds.

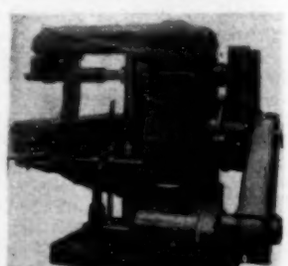


— 67 —

Milling Machine, Plain, High-Powered, Improved

Alfred Herbert, Ltd., Coventry, England. [Vol.72,p.203E]

This No. 18P high-power plain milling machine has an added feature of a quick power motion driven direct from a single pulley. The machine has a flush-top table with a working surface 57 by 13¾ in. or a special long table may be fitted 75 in. long. The automatic longitudinal feed is then 54 in.



instead of 36 in., which is standard. The automatic transverse feed is 13½ in. and the automatic vertical feed from the center of the spindle is 1 in. to 22 inches.

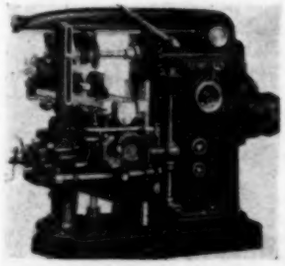
Drive is by single pulley, the maximum gear ratio being 24.4 to 1. Sixteen spindle speeds range from 16.5 to 427 r.p.m., and 18 feeds from ⅛ in. to 22½ in. per min. Power required is furnished by a 10-hp. motor and the approximate weight is 5,750 pounds.

— 68 —

Milling Machine, Universal, High-Capacity

Farmer, Stedall & Co., St. John St., Clerkenwell, E.C., England. [Vol.72,p.87E]

This high-capacity universal milling machine, built by J. Reinecker, A.G., Chemnitz, Germany, is simple to operate and is rigidly built. Centralized controls are featured. The machine is available in two sizes, one of which has a table area of 47½ in. by 12½ in. with a power table traverse of 29½ in. and a power cross traverse of



10¾ in., this machine taking 7½ hp. and weighing 6,270 lb. The larger machine has a table area of 57 in. by 13¾ in. with a traverse of 35½ in. and a cross traverse of 12¾ in., 10 hp. being required, and the weight 8,360 lb. In other dimensions, the machines are similar; that is, the distance from the spindle center to the table surface is 17¾ in.; spindle speeds 16, ranging from 15 to 480 r.p.m.; spindle nose bored No. 5 Morse taper, and table feeds 24, ranging from 0.47 in. to 19¾ in. per minute.

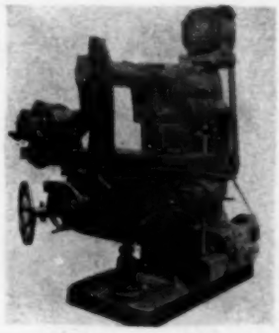
— 69 —

Milling Machine, Universal, All-Geared

Ward, Haggas & Smith, Keighley, England. [Vol.72,p.131E]

This motor-driven all-geared universal milling machine of the railway type is of extra strong design. The main column is of box section, the top portion inclosing the main driving gears, while the foundation base serves as a tank for coolant.

The spindle nose is threaded to take facing cutters. There



are 18 spindle speeds, from 12 to 350 r.p.m. A rack is provided for the over-arm to facilitate in and out movement. Drive is by an 8-hp., constant-speed motor mounted at the top and through belt and friction clutch.

A gearbox gives 18 feeds varying from ½ to 25 in. per min., and a feed-reverse box is carried on the knee slide. The universal dividing head has from 2 to 360 divisions

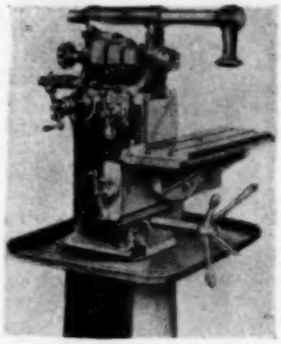
Weight, 4¾ tons.

— 70 —

Milling Machine, Universal, Precision, Small

S. G. Jones, Ltd., Brixton Road, London, S.W., England. [Vol.72,p.187E]

This machine, manufactured by Christen & Cie, Berne, Switzerland, has a table whereby the work may be held in many positions by the use of interchangeable attachments.



Hand or automatic feed may be provided.

Net weight, without countershaft, 594 pounds.

— 71 —

Milling Machine, Surface, Improved

J. Parkinson & Son, Shipley, England. [Vol.71,p.208E]

This machine, previously described in item No. 82, page 140, Vol. 70, of the *American Machinist*, has been improved in several details. Whereas the final drive to the milling cutter spindle was previously by a double-helical gear, the cutter is now mounted on a faceplate bolted to the flange of the spindle. At the back the faceplate has an internal gear, driven by

a pinion, and thus the drive is direct and does not come through the spindle. This is the principal change.

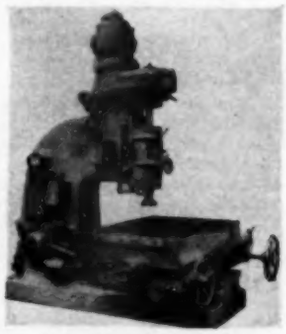
— 72 —

Milling Machine, Vertical, Heavy-Duty

Muller & Montag, Leipzig, Germany. [Vol.72,p.118E]

The rectangular table has the usual movement while at its center it forms also a circular table, which can rotate. Over-all, the The two centers can also be brought into line.

Two motors are employed. At the top of the column is a head containing gears for the spindle drive, being controlled by means of a dial giving six-



teen speeds from 15 to 250 r.p.m. By means of a gear-box, twelve feeds are available.

Weight, 18,700 pounds.

— 73 —

Milling Machine, Combination, Precision, Special

Selson Engineering Co., Ltd., Charles St., E.G., London, England. [Vol.71,p.209E]

The Schaublin - Villeneuve bench milling machine for gage making has, as its special feature, a quick interchangeability of parts to suit different work. The cutter head can be arranged either for vertical or horizontal milling, while the work may be held by a number of interchangeable table fitments.

The body has a lipped base, top horizontal V-ways carrying an intermediate slide for the cutter head and vertical V-ways carrying the knee.

The knee is not of the usual

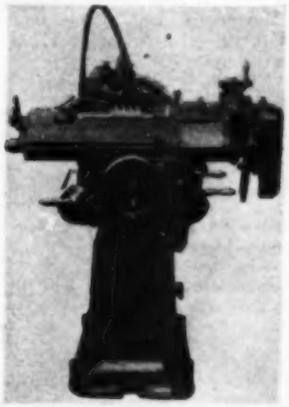
form. It slides vertically on the column ways, the movement being accomplished by screw, crank-handle, and micrometer collar, and controlled by an adjustable dead stop.

— 74 —

Milling Machine, Worm and Thread, Special

United Machine Tool Co., Ltd., Gray's Inn Road, London, W.C., England. [Vol.72,p.58E]

This machine, built by Schüttoff, A.G., Chemnitz, Germany, is a worm and thread milling machine with single pulley drive, controls being arranged so that they can easily be reached from the working position. The machine is equally suitable for milling right- and left-hand worms, taking a maximum depth of cut of ¼ in., as well as for producing sharp V-threads with the use of an annular group cutter.



For the production of Acme and similar threads, the use is recommended of milled (non-relieved) disk cutters with staggered teeth. The maximum diameter of work taken is 4¾ in., minimum diameter ⅛ in., and the maximum length, 10¾ in. at one setting. Three cutter speeds and 36 feeds are available.

The cutter head is located on the face of the headstock and the angular setting to suit the lead of the worm or thread produced is by graduation with vernier reading.

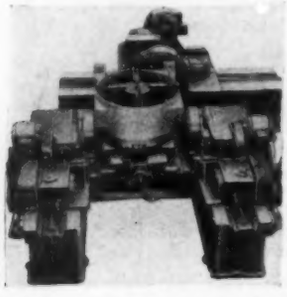
The machine takes 2 hp. for driving; occupies a floor space of 4 ft. 9 in. by 3 ft. 6 in.; and weighs about 2,200 pounds.

— 75 —

Milling Machine, Face, Triple-Head, Special

J. Parkinson & Son, Shipley, England. [Vol.72,p.100E]

This triple-head face-milling machine can be used for any job having accessible surfaces at right angles. The work is stationary and the cutter spindles traverse. One large cutter-head on the main bed takes a cut across the base of the work, while two smaller cutter-heads traverse along side beds at right



angles to the main bed. Each head reverses automatically at the end of the cutting stroke.

The heads are independently motor-driven. For the main head a 7½-hp. motor running at 720 r.p.m. is used. The cutter is of the inserted-tooth type, being centralized on the faceplate, to which it is secured by six bolts. The faceplate itself is carried on the spindle flange.

The worktable is 2 ft. 9 in. wide by 3 ft long and is carried on the center bed. The side-head cross-adjustment is 11 in. Heads can be fed separately.

— 76 —

Milling and Sawing Machine, for Hot Work

Coventry Machine Tool Works, Ltd., Coventry, England. [Vol.72,p.175E]

Hot milling and sawing machines are manufactured in three sizes, the largest (illustrated) will cut bars up to 4-in. diam. It consists of a frame carrying suitable work-supports at each end and bearing also a steel spindle which carries a 28-in. circular saw at one end and a 24-in. milling cutter at the other end. The spindle runs at 1,100 r.p.m., in ball and roller bearings.

The vise can be set at right angles for sawing a slit in line with the axis of a forging. The milling cutter at the other end of the spindle has cutting edges on the periphery and outer face

for milling off fins that may form on the circumference or face of a forging. A right-angle platform is provided on which flat work may be placed, as well as V or other rests, adjusted vertically and angularly for supporting round bars.

The smallest machine has a 14-in. saw and a milling cutter 14 in. diameter by 1½-in. face by 3½ in. at the side and 2-in. bars can be cut.

Planers and Shapers

— 77 —

Planer, Open-Side, Heavy-Duty

White Machine Tool Co., Ltd., Halifax, England. [Vol.72,p.67E]

Work 4 ft. 1 in. wide by 4 ft. 1 in. high by 20 ft. long can be taken on this open-side planer. It has a bed 32 ft. long and table 3 ft. 7 in. wide. The center T-slot in the table is carried through the chip pockets to enable work longer than the rated capacity to be admitted.

On the cross-slide the depth of face for the toolbox is 16½

in. The toolbox is of the offset type, to allow the tools to plane very narrow work. The slides have both hand and automatic feed in the horizontal, vertical, and angular direction.

Drive is by 20-hp. motor through a 3-speed gearbox giving cutting speeds of 24, 36, and 48 ft. per min. with a constant return speed of 100 ft. per minute. The rates of feed vary from $\frac{1}{64}$ to $\frac{1}{4}$ in.

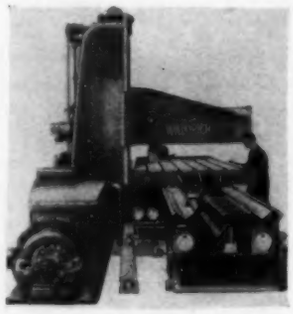
Weight, 22½ tons.

— 78 —

Planer, Open-Side, Hydraulic

H. A. Waldrich, G.m.b.H., Siegen, Germany. [Vol.72,p.150E]

The table of this hydraulic, open-side planer is 157½ in. long by 73 in. wide and has a maximum stroke of 51 in. The horizontal feeds range from zero to 0.55 in. Movement of the arm vertically is taken care of by electric motor. Speeds considerable higher than usual



can be adopted, and for the cut movement speeds up to 200 ft. per min. and for the return movement 260 ft. per min., can be employed.

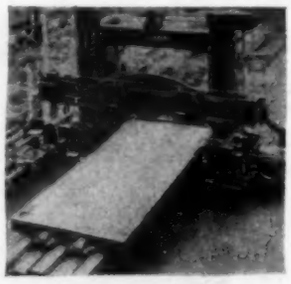
— 79 —

Planer, Electrically-Driven

Craven Bros. (Manchester), Ltd., Reddish, Stockport, England. [Vol.72,p.118E]

This large electrically-driven planer will plane 12 ft. 9 in. between the side toolboxes and 24 ft. 6 in. long. Two cuts, $\frac{5}{16}$ and $\frac{1}{16}$ in., can be taken at a speed of 50 ft. per min., with a load of 35 tons on the table.

Two ranges of speed are provided, namely, cutting speeds of 10 ft. to 40 ft. per min., or 20 ft. to 80 ft. per min., and return speeds of 30 ft. to 60 ft. per



min. and 60 ft. to 120 ft. per min. Eight horizontal feeds range from $\frac{1}{32}$ to 1½ in., the eight vertical feeds from 1/216 to ½ in., the eight side-head vertical feeds from $\frac{1}{64}$ to 2 in., and the eight table feeds from 1/80 to $\frac{3}{8}$ in.

For the control of the machine, start and stop switches are provided at each side for the table motion and also a pendulum switch to control the quick power traverse, knock-off switches being provided for all motions. The machine is guaranteed to produce work accurate and square in all directions within 0.00075 in. per foot.

— 80 —

Shapers, Crank

Alfred Herbert, Ltd., Coventry, England. [Vol.71,p.256E]

These seven sizes of Klopp high-speed crank shapers are reviewed under item 130, American Section, of this issue.

— 81 —

Shaper, for Railway Work, 32-Inch Stroke

Butler Machine Tool Co., Ltd., Halifax, England. [Vol. 72,p.226E]

The work table is made in two parts, the upper portion being removable so that axle-boxes or other bulky pieces may be admitted under the ram to a maximum depth of 2 ft. 4½ in.

A self-contained jib crane is fitted. The table is supported by a bracket which takes a bearing under its front edge.

The maximum length is 32 in. The work table (top portion) is 32 in. long by 25 in. wide. Work 18 in. deep can be admitted under the ram when the top table is in position. The horizontal traverse of the table on the cross-slide is 30 in., vertical traverse 15 in., and net weight of machine about 4½ tons.

— 82 —

Slotting Machine, Locomotive, Frame-Plate

Hulse & Co., Ltd., Ordsal Works, Manchester, England. [Vol.72,p.8E]

Each of the four heads is driven by a 20-hp. motor having a 3 to 1 speed variation, and the drive to the steel link is by means of a double-helical pinion, wheel, and double-reduction gear. The machine is capable of dealing with frames stacked up to a depth of 25 inches.

The bed is in two 30-ft. lengths, and carries four independent slotting heads, both end heads being made to face outwards. The feed and quick power traverse motions, both longitudinally and transversely, are effected by a 7½-hp. motor mounted on each slotting head. The feed is variable from 1/40

to ¼ in. per stroke. Angling mechanism is provided for coupling the longitudinal and transverse feeds together for angling or diagonally slotting openings for the horn blocks.

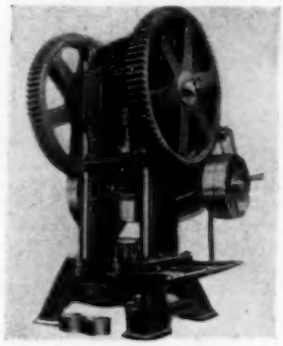
Presses

— 83 —

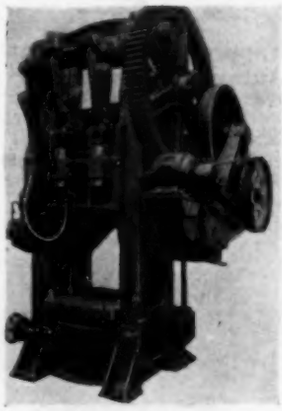
Press, Single-Acting

J. Rhodes & Sons, Ltd., Wakefield, England. [Vol.72, p.24E]

The No. 4 double-sided geared press is built on the tie-bar construction system. It weighs 35 tons and is single-acting. It



has a stroke of 14 in. and is provided with a special drawing device. The press runs at 12 strokes per minute.



to exert great dead end pressure, and is therefore particularly suitable for the redrawing and finish-pressing of conical and similar parts. The end pressure is 150 tons, the drawing pressure being 120 tons.

The frame is closed and held together by four heavy vertical steel tie-bars. The table is vertically adjustable by motor, an ejector device being supplemented by an arrangement for automatic return.

— 84 —

Press, Eccentric

Hunton, Ltd., Fitzroy Court, London, W., England. [Vol.72, p.72E]

The single-ended eccentric press built by Maschinenfabrik Weingarten, Weingarten, Wurtt, Germany, has a plate friction

clutch embodied in the flywheel. A mechanical band brake operates in connection with the coupling to effect immediate stopping of the machine.

— 85 —

Press, Drawing, Toggle

S. Wolf & Co., Ltd., 115 Southwark St., London, S. E., England. [Vol.72,p.136E]

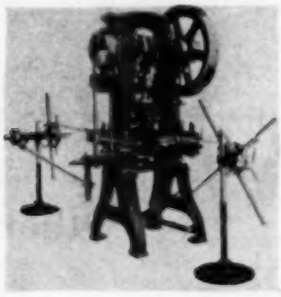
L. Schuler, A.G., Coppingen, Wurttemberg, Germany, is the builder of this toggle drawing press with automatic blankholder, which is specially built

— 86 —

Press, Gripper-Feed, Automatic

S. Wolf & Co., Ltd., Southwark St., London, S. E., England. [Vol.72,p.148E]

This Schuler double-sided crank press has an automatic gripper feed specially suitable for working on strip or band material. Four grippers oper-



ate in pairs. The mechanism is actuated from the crankshaft of the press, independent motion being transmitted to the outer and inner grippers.

— 87 —

Guides for Friction and Steam Drop Stamps

B. & S. Massey, Ltd., Openshaw, Manchester, England. [Vol.71,p.243E]

Where accuracy in die alignment is of importance, particularly where multiple-impression dies are used, the above

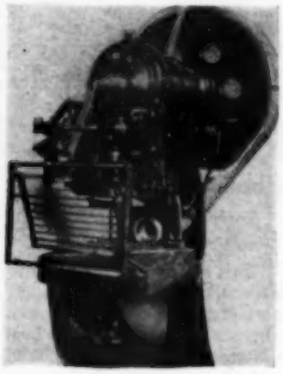
concern is using rigid guides for friction and steam drop stamps. The ordinary guide-bar rests with its lower end in a V-shaped recess in the anvil block, and is held at the upper end by packings in a housing in the girderwork. In order to prevent the transmission of vibration to the lifting mechanism, it must be free to move vertically, and this vertical movement or "bounce" naturally occurs at the moment of impact. The guide on the other end is bolted to the anvil block, on which it is definitely located, and is provided with double V-slides.

— 88 —

Guard Mechanism, Press

J. P. Udal, Upper Dean St., Birmingham, England. [Vol.72, p.23E]

The drive for the guard arm is taken from the end of the press crankshaft, and is, therefore, independent of the ram



adjustment of the press. It is carried over to one side of the press so that it does not interfere with tool setting in anyway, and works through a series of links which will withstand wear at the highest press speeds.

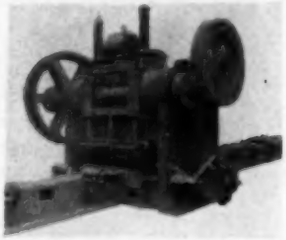
Punching and Shearing Machines

— 89 —

Punch, Multiple, Motor-Driven

Scriven & Co., Leeds, England. [Vol.72,p.226E]

With this motor-driven, multiple punching machine, equipped with a spacing device, four ⅛-in. holes can be punched in each of two flat plates, that is,



eight holes at a time. The punch holders, each with stop motion, are adjustable across the slide, to suit varying pitches of holes. The stop motions can be controlled individually by hand, or in batches by two interconnected bars. Any punch can be left unconnected, or be disconnected readily.

Floor space, 96 ft. by 12 ft. wide; weight, 35½ tons.

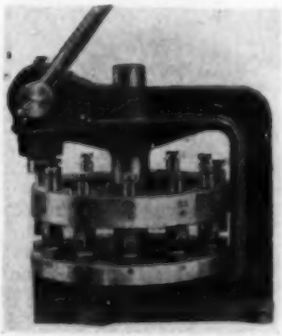
— 90 —

Punch, Multiple, Hand-Operated

Loranco, Ltd., 65a, Fenchurch St., London, E. C., England. [Vol.72,p.53E]

This hand-operated, multiple punching machine provides a quick means of punching different-sized holes without changing punches or dies. Twelve different punches are available for round, square, or other shaped holes, and any punch can be brought into position immediately for working.

The machine consists of a heavily ribbed body bearing a



rotating central pillar on which are mounted two disk-form carriers for punches and dies. The disks are rotated together so that any punch and its respective die remain in alignment.

The machine is made in two sizes. One exerts a pressure of 8 tons, and will punch through sheets up to ¼ in. thick. The throat capacity allows holes to be punched 3⅜ in. from the edge of the work. The larger machine exerts a pressure of 10 tons, for punching material up to ⅜ in. thick.

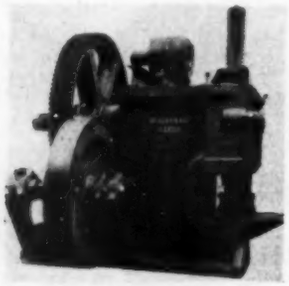
Net weight of the smaller machine, approximately 150 lb.

— 91 —

Shear, Fishplate

Scriven & Co., Ltd., Leeds, England. [Vol.71,p.271E]

This single-ended, motor-driven, shearing, punching and straightening machine is adapted for shearing mild steel bearing plates or fishplates and punching six ¾-in. square holes therein and flattening them at one stroke. The box-section body



carries a reciprocating slide and the lower face of the jaw bears a steel dieholder.

Floor space, 11 ft. 6 in. by 9 ft. 6 in.; weight, 19 tons.

— 92 —

Shearing Machine, Wire Rope

Morton & Weaver, Coventry, England. [Vol.72,p.227E]

This machine, built in several sizes, cuts through 1½-in. steel rope in 10 seconds, and is hand operated. In addition to the

leverage obtained with the jaws, it has a screw action operated by worm and wormwheel. The blades are of high-speed steel, and are replaceable. The machine weighs 1,250 lb. and can be readily transported by crane or on its own wheels.

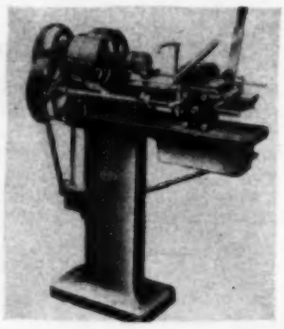
Threading Machines

— 93 —

Threading Machine, High-Speed

Voucher, Ltd., Walsall, England. [Vol.72,p.23E]

This machine will cut ⅛-in. Whitworth threads, ¾-in. square Acme threads, and conduit and gas threads in proportion, the maximum length at one setting being 14 in. The leadscrew attachment illustrated is optional. The diehead used, made by the firm, will cut square threads



and is mounted on the spindle nose, the work being stationary, but the same type of diehead is also available in the capstan or non-rotating type.

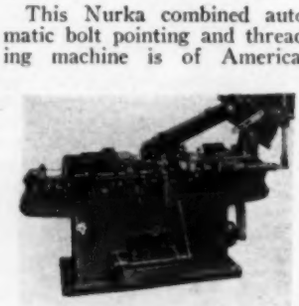
Weight, with overhead motor, 470 pounds.

— 94 —

Pointing and Threading Machine, Bolt, Automatic

G. H. Alexander Machinery, Ltd., Coleshill St., Birmingham, England. [Vol.72,p.130E]

This Nurka combined automatic bolt pointing and threading machine is of American



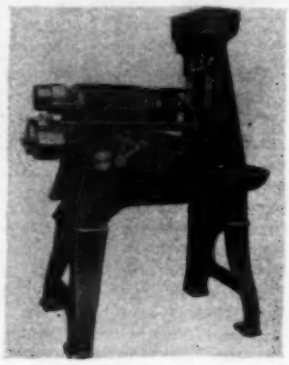
origin and is built under license for sale in European countries by Alfred de Fries, G.m.b.H., Kassel, Germany. It is suitable for cold or hot pressed bolts, as well as bright bolts. Three chucks are arranged on the three-station turret. Having taken a bolt from the spring fingers, the chuck is indexed to the pointing station, then to the threading station, and next to the loading station, where the finished bolt is dropped and a new blank is gripped. Two bolts are machined at the same time, one being pointed while the other is threaded.

— 95 —

Tapping Machine, Nut, Automatic, Duplex

Leonard Lasch, Cologne, Germany. [Vol.71,p.295E]

This fully-automatic nut-tapping machine will tap V-threads, right or left hand, in hexagon and round nuts of brass, iron



or steel, cold or hot pressed, as well as bright nuts. The machine is duplex, having two tapping spindles which run in sleeves.

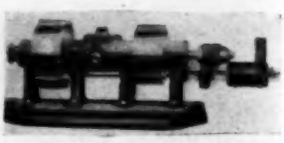
The machine is made in four sizes, each with two spindles. The smallest takes ¼ hp. and weighs 700 lb. In free-cutting material it will produce 4,800, ¼-in. taps per hour. The largest machine takes 1½ hp. and weighs 2,400 lb. It has an hourly output of 450 1-in. nuts.

— 96 —

Tapping Machine, Bench

John Ackworthie, Ltd., Coleshill St., Birmingham, England. [Vol.72,p.39E]

Two sizes of this machine are available to tap ¾-in. and ⅛-in. Whitworth threads, respectively. The machine has a fric-



tion drive, which can be adjusted to suit the size of tap in use.

The tapping spindle is driven by right- and left-hand belts. Pushing the job on to the tap causes four hardened steel pegs to engage, which drives the tap.

—97 —

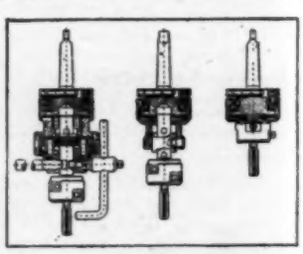
Tapping Attachments

Leonard Lasch, Cologne, Germany. [Vol.72,p.99E]

These tapping attachments are for use in radial and other drilling machines, and are available in three styles. The first type, Model A, is available in five sizes for Whitworth threads from ⅛ in. to 1¼ in. in diameter and with pipe and metric threads to correspond.

Types B and C may be used on drilling machines, boring mills, and turret and other lathes. Type B has a clutch for forward and return motion.

Type C is without a disengaging clutch and is intended



for use where accurate depth of tapping is unimportant. It is shorter than the other types and can be used for driving screws, setscrews, and nuts, as well as for drilling purposes. Types B and C are available in four sizes, the range being from ⅛- to ½-in. Whitworth and other threads in proportion.

Other Machines

— 98 —

Bending Machine, Plate, Horizontal, Four-Roll

Scriven & Co., Ltd., Leeds, England. [Vol.71,p.192E]

This machine is arranged for direct-geared, reversing-clutch drive from a continuous-running motor, and can bend cold, mild steel plates up to 26 ft. wide by ⅞ in. thick into complete tubes.

The forged lower roller is 22 in. in diameter and the upper roller is 21 in. in diameter. The latter is carried in a detachable bearing in the fixed frame end, and by a half-bearing in the

swing-over end, and also an outer adjustable bearing in the gearing stand. The two side rollers are each 18-in. in diameter, and are carried in adjustable blocks in the frame ends.

The adjustments of the three rollers are operated by reversing clutches.

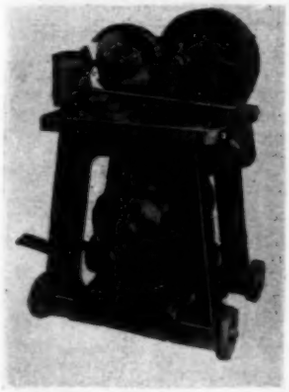
Floor space occupied, 39 ft. by 17 ft. wide; weight 98 tons.

— 99 —

Cutting-Off Machine

Voucher, Ltd., Walsall, England. [Vol.72,p.25E]

Bars, angles, etc., can be cut off to length and squared on the end by means of this machine. A swiveling vise is available, by means of which work may be cut to any angle up to 45 deg. The machine is supplied with 8-, 10-, or 11-in. saws. With the last, it will cut light tubes, up to 2¼ in. in diameter or



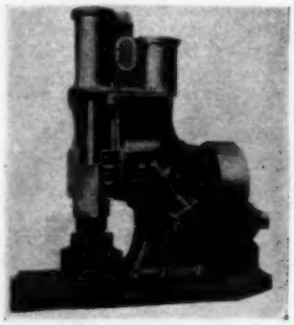
1 in. bars on single gearing, but on double geaing it cuts 2¼ in. light tubes, 2 in. gas pipe or 2½ in. bars.

— 100 —

Hammer, Pneumatic, Totally Inclosed, "Clear Space"

B. & S. Massey, Ltd., Openshaw, Manchester, England. [Vol.71,p.208E]

Total inclosure of the working parts within the standard of the machine is now extended to the 20-cwt. pneumatic power hammer of the over-hanging form with slides.



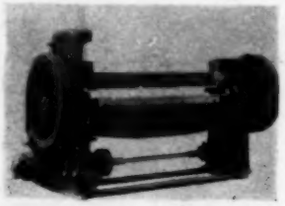
The hammer has the usual Massey control and will strike either single or automatic blows of any desired force. The longest stroke is 33 in., the clear space between slides is 16 in.; the top pallett face 14½ in. by 10 in., and the height of the anvil pallett face 22 in. Automatic blows, 85 in. number, can be struck per minute, and a 12-in. square bar can be worked.

— 101 —

Folding Machine, Universal

Hunton, Ltd., Fitzroy Court, London W., England. [Vol.72, p.59E]

This universal folding and rounding machine with swinging top bar has a new method of drive. The gears actuating the reversing clutch are driven direct by an electric motor



Movement of the folding and top bar is controlled from the place of the operator by a hand lever.

— 102 —

Hobbing Machine, Heavy

Dowding & Dickinson, Greycoat St., Westminster, S.W., England. [Vol.72,p.70E]

This hobbing machine, manufactured by Hermann Pfauter, Chemnitz, Germany, is the No. 9 size specially designed for dealing with coarse-pitch, wide-face spur gears, heavy-section splines, and multi-start worms.

Specifications: height of centers, 5 5/16 in.; maximum hobbing distance, 19¾ in.; distance between centers, 21¾ in.; maximum diameter hobbed, 10⅝ in.; maximum pitch hobbed, 2 d.p.; number of teeth hobbed, from 4 to 100; maximum diameter of hob, 5⅞ in.; maximum length, 5½ in. and maximum displacement of hob 1¼ inches.

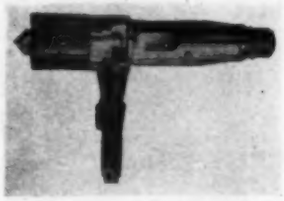
Floor space, 69x86 in.; weight, with pump and countershaft, 5,500 pounds.

— 103 —

Riveters, Pneumatic, Short

Globe Pneumatic Engineering Co., Ltd., 1, Victoria St., London, S.W., England. [Vol.72,p. 187E]

This jam riveter is for use in very confined spaces where it is impossible for the operator to hold the machine with the usual trigger spade-type handle,



and where also the diameter of the hammer must be a minimum, as for angle and channel work. The tool is of the percussion type with a pneumatic telescopic holder-on at the rear end.

Another short yoke riveter of the percussion type is also designed for working in very confined spaces. The total length, including the special snap, does not exceed 12½ in., the distance from the center of the hammer to the outside of the casing being 1⅞ in. Total weight of the machine is 80 lb., the capacity being 1-in. rivets with air at 95 to 100 lb. per sq. in.

— 104 —

Straightening Machine, Plate, 5-Roll

Scriven & Co., Ltd., Leeds, England. [Vol.71,p.294E]

This motor-driven, five-roll, plate-straightening and mangling machine will flatten plates from ¼ to 2¼ in. thick and up to 12 ft. wide. Three disposi-

tions of the rollers are available: first, for straightening thin plates from ¼ to ⅞ in. thick; second, for heavier plates up to 2¼ in. thick; and, third, for curving plates. In all these arrangements the advantage of a pair of nipping rollers is obtained. These rollers, together with the other three, remove the small local buckles in thin plates.

Floor space, 28 ft. by 16 ft. wide; weight, 90 tons.

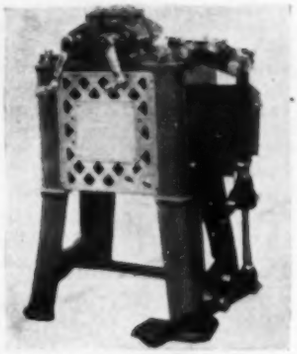
— 105 —

Welder, Butt, High-Speed

Holden & Hunt, Cox's Lane Works, Old Hill, Staffs, England. [Vol.72,p.53E]

This welder will take up to ½-in. diameter steel and alloy steels. The machine is for high-speed mass production with a.c. current and is rated at 15 kw.

The heads are water cooled. Speed of welding is obtained by using the smallest possible upsetting gap. A thin fin only is produced which can be removed easily. The speed of welding varies from about ¼ sec. to 1½ sec., according to the area of



the weld and the class of metal.

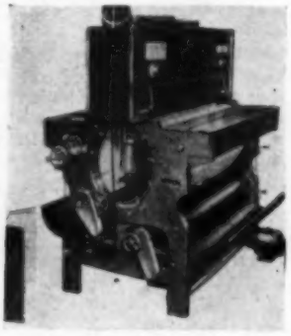
Floor space, 2 ft. 3 in. by 2 ft. 2 in.; height 3 ft. 4 in.; weight, 575 pounds.

— 106 —

Copying Machine, Continuous

Precision Photo Printing Plant, Ltd., Salisbury House, London, E.C., England. [Vol. 71,p.211E]

This continuous copying machine is intended for making blueprints, whiteprints, and other reproductions. It is of the



double type, but single machines of the same design are available, the design being carried out on the unit principle. Exposures are effected by the usual method of traveling lamps before semi-circular glass exposure platens. The width of paper admitted is 45 in. and floor space 62 x 44 in.

— 107 —

Molding Machines, Pattern-Draw, Jar Roll-Over

Pneulec, Ltd., Smethwick, Birmingham, England. [Vol. 72,p.202E]

This jar roll-over pattern-draw molding machine has two features, the manner in which the shock is taken when the table plate falls and the method

employed in rolling-over and drawing the pattern. The impact is not made by the table striking on a small area around the top of the cylinder, but is evenly distributed over the table and base.

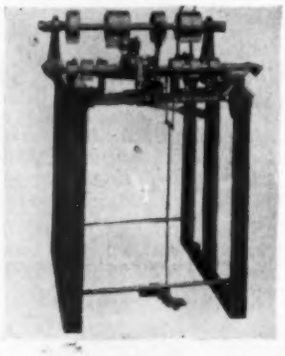
The roll-over portion is an entirely separate machine.

— 108 —

Polishing Machine

G. Finney & Co., Birmingham, England. [Vol.72,p.24E]

This machine was primarily designed for the flashing and polishing at one setting of small circular Bakelite or similar



articles, or for small brass work. A self-contained countershaft is used, driving both front and back headstocks, which run at the same speed and in the same direction.

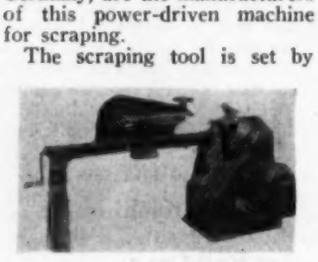
— 109 —

Scraper, Power-Operated

Roberts, Black & Co., Ltd., Bridge St., Manchester, England. [Vol.72,p.215E]

Alig & Baumgärtel, Berlin, Germany, are the manufacturers of this power-driven machine for scraping.

The scraping tool is set by



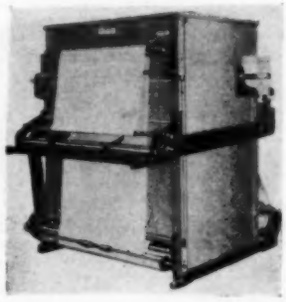
means of a spanner with fine adjustment, which limits the forward feed. Krupp Widia metal is recommended as the most suitable material for the scraper tools.

— 110 —

Sensitizing Machine for Blueprint Paper

R. W. Munro, Ltd., Cornwall Road, South Tottenham, N., England. [Vol.71,p.253E]

This machine for sensitizing paper is claimed to be suitable for the print room of reasonably large drawing offices. The



object of the machine is to sensitize paper as required, instead of stocking rolls of sensitized paper. It is used in conjunction with a power printing machine where an appreciable amount of paper is required. Self-contained, it occupies a floor space of 5 ft. by 5 ft. and is 5½ ft. high. It will deal with paper up to 40 in. wide.

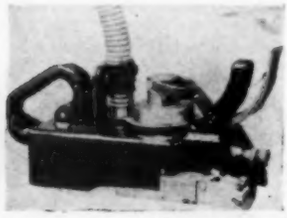
Production proceeds at the rate of about 200 to 250 yards per hour.

— 111 —

Sheet-Metal Cutter

Loranco, Ltd., 65a Fenchurch St., London, E.C., England. [Vol.72,p.214E]

These sheet-metal cutters are available in five sizes in hand and power models. The largest machine, illustrated, is for



cutting ordinary steel, copper, brass, and zinc sheet up to 10 mm. thick, leaving a smooth, clean edge. Straight, circular, oval, or regular forms can be cut, the material being fed by hand.

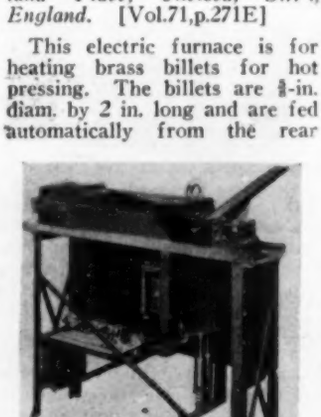
Furnaces

— 112 —

Furnace, Billet-Heating, Automatic, Electric

R. M. Catterson-Smith, Lacland Place, Chelsea, S.W., England. [Vol.71,p.271E]

This electric furnace is for heating brass billets for hot pressing. The billets are ⅜-in. diam. by 2 in. long and are fed automatically from the rear



through twin tubular heating chambers.

The heating element extends along the whole length of the tubes and is composed of two sections, nickel-chrome wire and Silit rods forming two heating zones.

— 113 —

Furnace, Electric, Rotary, Continuous

R. M. Catterson-Smith, Lacland Place, Chelsea, S. W., England. [Vol.71,p.273E]

This electric furnace with rotating hearth is totally inclosed and has an annular chamber with the inlet and door for introducing the work at the top,

the outlet and door being at the side. The furnace covers the general heat-treatment of tools.

The section of the circular heating chamber is 4 in. wide by 2 in. high, the mean length being 6 ft. A preliminary heating zone raises the temperature to 750 deg. C., whereas the final section produces a temperature of 1,200 deg. Centigrade.

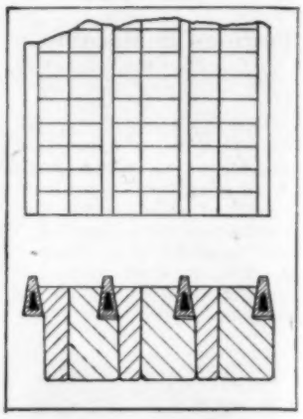
— 114 —

Furnace Roofs and Walls, Suspended

A. B. Cleworth & Co., Ltd., 150, Queen Victoria St., London, E.C. [Vol.71,p.295E]

Instead of building the roof on the spring arch principle, with bricks fixed permanently in place, the roofs or walls are made up of blocks merely dropped into position so that they can be easily removed when required. The blocks are supported by hematite, cast-iron runners of inverted V-form and made hollow or of open section. The runners are disposed lengthwise in the furnace.

Furnace walls are built up on



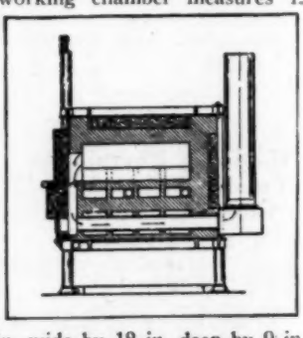
the same principle. The blocks are carried in tiers by the hematite runners, which are suspended from columns.

— 115 —

Furnace, Heat-Treating, Gas-Fired

Lucas Furnaces, Ltd., Birmingham, England. [Vol.72,p.25E]

Temperatures up to 1,050 deg. C. can be obtained with natural draught from this furnace. The working chamber measures 12



in. wide by 18 in. deep by 9 in. high to the crown of the arch.

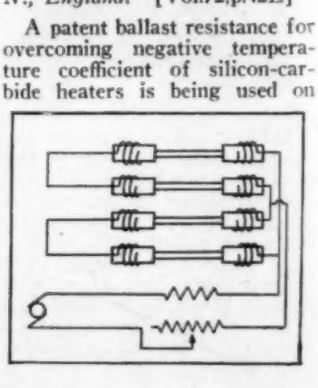
The furnace doors work on the lifting counterbalanced principle, and the furnace is built in a tubular casing. With forced draught and illuminating gas, temperatures can be reached up to 1,400 deg. C.

— 116 —

Furnace, Resistance, Improved

Wild-Barfield Electric Furnaces, Ltd., Holloway, London, N., England. [Vol.72,p.42E]

A patent ballast resistance for overcoming negative temperature coefficient of silicon-carbide heaters is being used on



the improved resistance furnace manufactured by the above company.

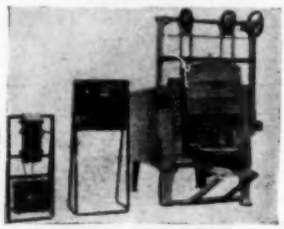
The rate of heating can be regulated by inserting in series with the furnace a regulating resistance, which is cut out step by step as the resister bars age.

— 117 —

Furnaces, Annealing, Electric

General Electric Co., Ltd., Magnet House, Kingsway, London, W.C., England. [Vol.72, p.68E]

These electric furnaces are suitable for annealing, hardening, tempering, case-hardening, and normalizing steel, and also the annealing, normalizing, and



heat-treating of brass, copper, aluminum, and other non-ferrous metals and alloys.

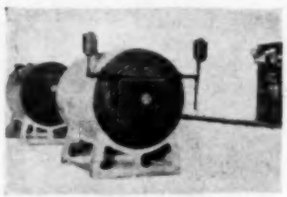
Furnaces have a maximum working temperature of 1,830 deg. F., and can be arranged for any standard voltage either d.c. or a.c. of any frequency. Furnaces with automatic temperature control gear are made in two standard sizes, 30 kw. and 80 kw.

— 118 —

Furnace, Electric, Portable

Birmingham Electric Furnaces, Ltd., George St., Birmingham, England. [Vol.72, p.82E]

Of the two standard portable electric furnaces, one has a hearth 30 in. long by 15 in. wide and a maximum rating of



18 kw., while the other has a hearth 3 ft. long by 23 in. wide and a maximum rating of 30 kw. The first has been used for heat-treating steel parts previous to oil quenching and the second for carburizing.

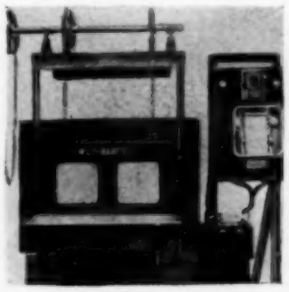
The furnace consists of a welded steel cylinder, lined with special refractory and insulating material. Entirely automatic temperature control designed to maintain any desired temperature up to 1,000 deg. C. is fitted as standard.

— 119 —

Furnace, Electric, with Recording Controller

Wild-Barfield Electric Furnaces, Ltd., North Road, Holloway, London, N., England. [Vol.72,p.83E]

This box-type industrial furnace is built with the firm's patented totally-inclosed resistance heating elements, which



provide uniform radiation over the effective area and are protected from mechanical damage. It has a maximum loading of 20 kw. and requires less than 4 kw. to maintain it at 800 deg. C.

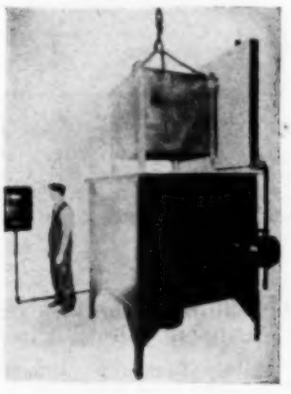
The furnace illustrated is controlled by a Foster recording controller.

— 120 —

Oven, Tempering, Forced-Draught

Wild-Barfield Electric Furnaces, Ltd., North Road, Holloway, N., England. [Vol.72,p. 120E]

This forced-draught tempering oven consists essentially of a square box with hinged and counterbalanced lid, and heated



by resistances at the sides. Air is drawn through the work by means of a perforated metal carrier, and is directed over the surface of the heaters, from which it is again drawn into the work carrier.

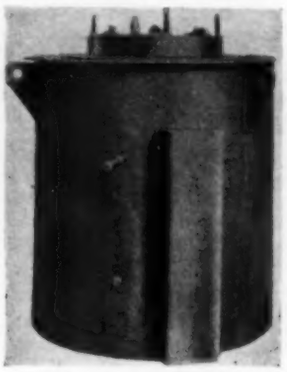
The oven has an internal working capacity of 41 by 40 in., the maximum operating temperature being 400 deg. C. The actual operating temperatures range from 215 to 385 deg. C., the time for heating being two hours and three hours, respectively. The total weight of the charge is 2,090 lb.

— 121 —

Furnace, Annealing, Bright, Electric

General Electric Co., Ltd., Magnet House, Kingsway, London, W. C., England. [Vol.72, p.13E]

For bright annealing by the Grunewald system, this vertical electric furnace can be worked at comparatively little cost. The



process is particularly adaptable for treating coils of wire and strip, which are suspended from the top of the furnace, the pot acting as a protecting shell.

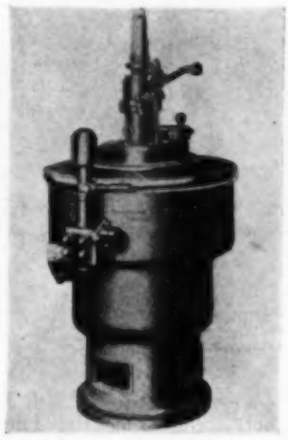
The method employed for sealing insures an air-tight joint.

— 122 —

Melting Pot, Combustion, Submerged

Submerged Combustion, Ltd., 28 Victoria St., S.W., London, England. [Vol.72,p.214E]

The Hammond white-metal melting machine, Size O, takes 60,000 B.t.u. of gas per hour and weighs 1,555 lb. empty. The



capacity is 700 lb. of lead and the production is 1,100 lb. of lead per hour, pouring at 752 deg. F. Efficiency is claimed to be 95 per cent.

Testing Equipment

— 123 —

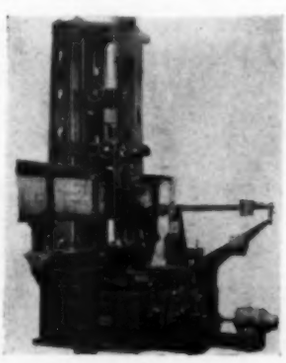
Testing Machine, Universal, Multi-Lever, 200,000-Pound

Craven Brothers (Manchester), Ltd., South Reddish, Stockport, England. [Vol.71,p.210E]

This universal testing machine is of 200,000-lb. capacity, and of three rotating screw type, motor-driven. It tests in tension, compression, and transverse bending, each to the full capacity. The motion of the pulling crosshead is 8 ft. 3 in., the space between screws 21 in.

The multiplying power of the lever system is 4,000 to 1. A split poiseweight gives two ranges of load, viz., 0 to 200,000 lb., and 0 to 20,000 pounds.

Weight, 20 tons.



— 124 —

Deflectograph, Universal

Cambridge Instrument Co., Ltd., 45 Grosvenor Place, London, S. W., England. [Vol. 71,p.255E]

The "Deflectograph" is a portable instrument for recording the relative movement between any two parts of a machine or

other structure. It can be used in any plane, and, being small and compact, can be applied to almost any part of the machine under test.

Records of movements are obtained by the action of a moving stylus on transparent celluloid film. This method has the advantage of durability.

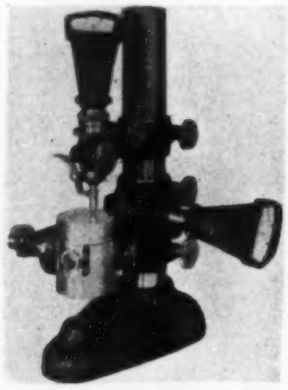
Two independent datum lines are also traced on the opposite surface of the celluloid strip by means of two separate styluses.

— 125 —

Piston Measuring Instruments

S. G. Jones, Ltd., Brixton Road, London, S.W., England. [Vol.72,p.57E]

Fortuna - Werke, Stuttgart-Cannstatt, Germany, make these instruments for testing the dimensions of pins, pistons, and



other cylindrical work, both appliances employing the Hirth "Minimeter." The work under test is held in the V-shaped support, the surfaces of which are glass hard and set at an angle of 60 deg. to each other.

The second instrument is for testing the distance between piston pin holes and the piston head and also the squareness of piston pin holes with the piston axis.

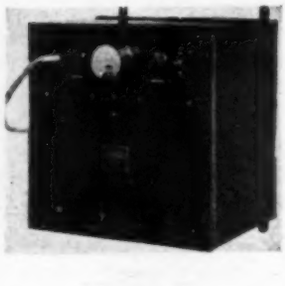
— 126 —

Gear Tester, Vibration Type

Standard Telephone and Cables, Ltd., Columbia House, Aldwych, W. C. London, England. [Vol.72,p.222E]

To discover gear trouble such as noise, inefficiency, and undue wear, an instrument known as the "Noise Comparator" has been developed. It is designed to indicate the relative amount of vibrational noise emitted by different gears. By its use any fault in the perfect meshing of two gear-wheels is at once disclosed on the indicator. It is claimed that the utility of the apparatus is not confined to the comparison of noises emitted by gears, for it may be extended to the testing of vibration of a complete machine.

Over all dimensions of the case are 14½ in. wide, 15 in. high, and 11½ in. from front to back. A gramophone pick-up is provided.

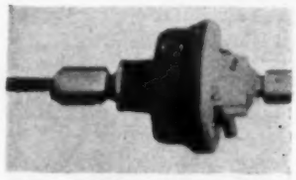


— 129 —

Chuck, Tapping, Reversing, for Left-Hand Taps

Alfred Herbert, Ltd., Coventry, England. [Vol.71,p,246E]

For use on drilling machines not fitted with reverse motion to the spindle the above concern has applied its reversing tapper



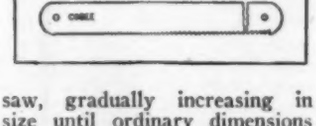
for left-hand taps, the mechanism being so arranged that when the tap engages with the work, the downward movement of the tapper spindle is momentarily arrested, the body of the tapper moving downward for a short distance until a driving key in the tapper spindle engages with an internal gear which gives the spindle its anti-clockwise rotation for left-hand tapping.

— 130 —

Hacksaw Blades, Variable-Pitch Teeth

Barsonator Werkzeug G.m.b.H., Kurze Reihe, Hamburg - Wandsbek, Germany. [Vol.72,p.204E]

This "Cobee" hacksaw blade, intended for cutting iron and steel, has variable-pitch teeth. They are fine at one end of the



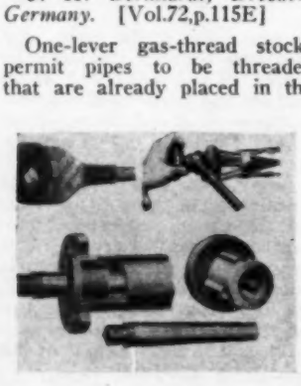
saw, gradually increasing in size until ordinary dimensions are obtained. The fine teeth permit easy starting of the cut and prevent jamming.

— 131 —

Threading, Reaming, and Cutting-Off Tools, Pipe

C. H. Bernhardt, Dresden, Germany. [Vol.72,p.115E]

One-lever gas-thread stocks permit pipes to be threaded that are already placed in the pipe ways, and can also be used on spiral pipes, already bent. The setting of the dies to diameter is automatic and a scale permits them to be adjusted so as to cut large or small, as desired. These stocks are available in a number of sizes, to cut from ¼-in. to 4-in. pipe.



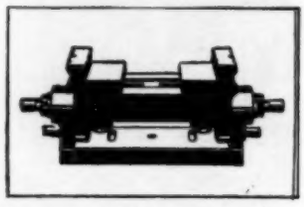
The pipe reamer is a conical mandrel bearing three inserted cast-steel blades. The reamer is rotated by a hand lever and ratchet gear. It will deal with ⅜- to 3-in. pipe.

— 132 —

Vises, Jig

Wearden & Guylee, Ltd., Bradford, England. [Vol.71,p. 191E]

A description was published of these vises on page 112E for the October 15 issue, 1927. In the newer form, the range has been extended by permitting the



vise to swivel around a horizontal axis. The jaws have independent movement and thus one of them can be set as a stop for repetition work.

These vises are made in five different sizes, the smallest having a jaw 3½ in. wide by 1½ in. deep, and opening 4½ in. internally and 6¼ in. externally. The largest model has jaws 6⅜ in. wide by 2¾ in. deep, opening 12¼ in. internally and 15¾ in. externally. The T-slotted tables provided range from 4¾ by 8 in. to 9¾ by 18½ inches.

— 133 —

Vise, Bench

C. & J. Hampton, Ltd., Sheffield, England. [Vol.72,p. 22E]

The jaws of this bench vise are 4 in. wide, opening to 4½ in., and by means of the pipe grips shown, tubes from ¼ to 1½ in. in diameter can be held. The vise has a steel slide with a

steel shield to protect the main screw. Detachable steel clam jaws faced with fiber are available to prevent damage when gripping finished work. Offset jaws enable the vise to hold long and wide pieces vertically. The base can be swiveled through a complete circle.

Weight, 26 pounds.

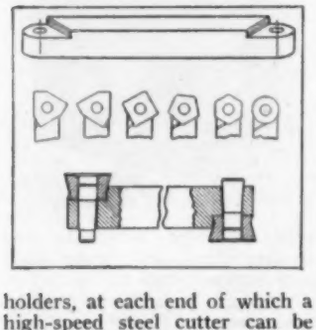
Miscellaneous Equipment

— 127 —

Cutting Tools

English Steel Corporation, Ltd., Sheffield, England. [Vol. 71,p.272E]

Tools for boring mills, planing, and shaping machines are supplied by the above concern and consist of hard tough steel-



holders, at each end of which a high-speed steel cutter can be secured by a pin. The standard holders are in seven sizes of sections from ⅞ in. sq. to 2½ in. sq. each in two types.

For planing machines a swan-neck holder is available in five different sizes, from ¾ in. sq. to 1¾ in. sq. to take the full range of cutters.

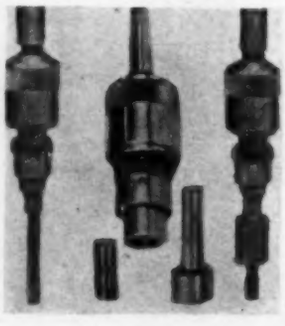
— 128 —

Drill Chuck and Safety Tapper

Albert Herbert, Ltd., Coventry, England. [Vol.71,p.223E]

Chucks for drilling machines, which combine the company's quick-change chuck and its safety tapper with slipping clutch to prevent tap breakage, have been introduced. In the left-hand illustration is shown the arrangement for drilling.

This tool is made in two sizes, to take drills with Morse taper shanks Nos. 1 to 3 and taps from ⅜- to 1¼-in. Whitworth.



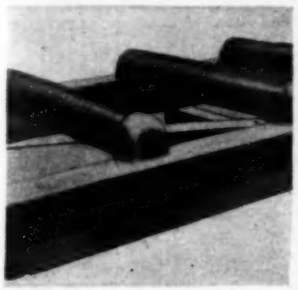
— 134 —

Conveyors, Solid-Roller

Universal System of Machine Moulding and Machinery Co. Ltd., 13 Wilson St., London, E. C., England. [Vol.72, p.9E]

This solid roller conveyor consists of a series of rollers arranged in track form.

Rollers are mounted on the top flanges of the angle irons forming the sides of the track in an even, level track surface.



A standard roller track 16 in. wide would have four rollers per yard, the weight per yard run being 125 lb. The standard diameter of rollers is 2¾ in., and the weight of supplementary rollers with end bearings is 24 lb. each. A track 20 in. wide would have rollers of the same diameter and pitch, the weight per yard being 145 lb., and the weight of supplementary rollers being 30 lb. each.

— 135 —

Welding Generators, Portable

Asea Electric, Ltd. (formerly Swedish General Electric, Ltd), 5, Chancery Lane, London, W. C., England. [Vol.71, p.253E]

This standard electric portable welding set is provided with a d.c. generator driven by a motor wound to suit the available supply. The arc is

easy to strike and burns smoothly and evenly.

The unit consists of a motor for direct or three-phase alternating current, coupled direct to the welding generator.

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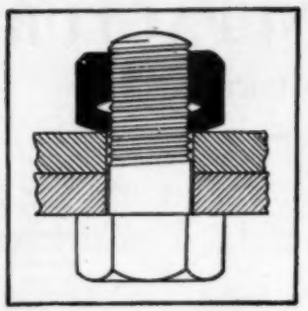
Locknut

Evertite Locknuts, Ltd., Fieldgate, Walsall, England. [Vol.71,p,207E]

This locknut has two distinguishing features from an ordinary single nut, the first being that one of the ends is



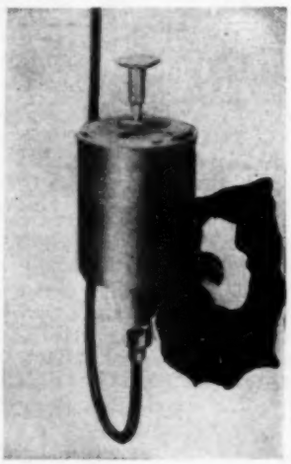
beveled, and the second that inside of the nut from two to three threads above the bottom face is an annular V-groove. Pitch of the thread is therefore slightly displaced and the strain causes the nut to take a secondary grip on the threads of the bolt, thus obtaining a double lock. No permanent displacement or stripping of the thread occurs.

— 137 —

Lubricator, Hand-Operated

B. & S. Massey, Ltd., Openshaw, Manchester, England. [Vol.71,p.223E]

Primarily for use on the above company's steam and pneumatic power hammers, this lubricator is intended to provide a simple and efficient



means of oiling cylinders and other parts which are not easily within the reach of the operator, and which cannot or should not be lubricated automatically.

Two sizes are available, holding two pints or four pints, respectively. The lubricator consists of an oil vessel combined with a simple hand pump.

— 138 —

Magnetic Rake for Workshop Floors

Rapid Magneting Machine Co., Ltd., Lombard St., Birmingham, England. [Vol.72,p. 24E]

This is a self-contained magnetic apparatus that can be wheeled over large shop floors in order to pick up stray nails and pieces of iron, or it may be used for extracting iron from miscellaneous material lying on the floor. A rectangular magnet, 24 in. wide is suspended from the axle of a truck so that the under surface of the magnet is about 1¼ in. above the floor. Current is supplied

to the magnet from a standard 12-volt car battery carried in a container that opens at the side for the removal of the battery for charging purposes. When not in use the truck is lowered to stand on the floor in the ordinary way.

— 139 —

Motor, Induction-Repulsion

Higgs Motors, Witton, Birmingham, England. [Vol.72,p. 175E]

These small repulsion-start induction motors are intended for use where silence and high starting torque are necessary. Attached to the armature is a

centrifugal governor, and at the opposite end is a vertical-face commutator. A sleeve and shorting lace are free to move inside the commutator parallel to the shaft, and at the predetermined speed the governor opens and by means of internal push rods forces the sleeve and lace outward. The lace short-circuits the commutator bars. At the same time a toggle washer is forced into the center of the end cover, lifting toggle levers which remove the pressure from the brushes.

— 140 —

Speed Reducers with Motors

David Brown & Sons, Ltd., Huddersfield, England. [Vol. 71,p.244E]

These speed reducers consist of an electric motor and worm-

reduction gear coupled together. The motor is carried by means of a flange on the housing of the worm gear. A special range of a.c. and d.c. motors is used for the purpose. These motors have been developed by the British Thomson-Houston Co., Ltd., especially for the purpose.

The vertical motor may be removed bodily without disturbing the alignment or adjustment of any bearing. In the horizontal set shown, the motor shaft and worm shaft are coupled together, a roller bearing on the inner end of the motor shaft also forming the inner bearing and worm shaft. Gear ratios of 7½, 10, 15, 20 and 30 are standard. The lubrication of the worm gear, worm shaft, and wheel shaft bearings is by splash.

— 141 —

Time Register, Automatic

Warwicks Time Stamp Company, 5 Camden Passage, London, N., England. [Vol.72,p. 225E]

The automatic time register illustrated for recording the year, month, day, hour, and minute, can be fitted with an attachment for "clocking-in" by employees. It is inclosed in a welded metal case, with the stamping panel in a convenient position above the movement and in the front. The register is fitted with an eight-day clock movement which can be wound without unlocking the case. The printing-wheels print through a ribbon by merely depressing the spring plunger, which has the pressure pad attached to its end.

Another time stamp marketed by the firm stamps the elapsed

time and so eliminates the necessity for subsequent calculation. The machine itself calculates and prints the time intervals which represent productive labor. The record is stamped on cards or documents and is in the form of graduated dials.

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NEWS OF THE WEEK

Manufacturing Ebbs With Summer; Metal-Working Industries Affected

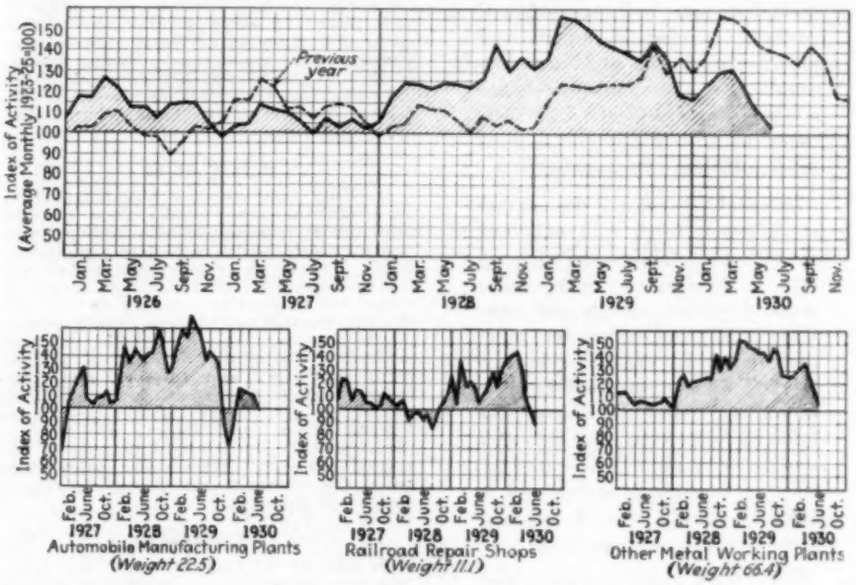
JUNE brought the lowest rate of operations in the metal-working industry since December, 1926. Reports received on the consumption of electrical energy for power purposes indicate that the downward trend in the metal-working plants which started in March was continued through June. The rate of operations in these plants as a whole during June was 7.5 per cent less than that of May, 26.8 per cent less than that of June of last year, and 16.6 per cent less than that of June, 1928. Only a few of the plants reported increased operations. A decrease in rate of operations normally takes place in the industry during June, but the drop in activity during the month just closed is some 2.6 per cent greater than that which would normally be expected.

The average rate of operations in the metal-working industry for the first half of the year was 18 per cent less than that reported for the first half of 1929.

The automobile manufacturing industry, including the manufacture of parts and accessories, appears to have suffered a slightly less than normal drop in activity during June, but was still operating on a plane 35.5 per cent below that of June of last year. Operations in the automobile industry, however, are still above those recorded last December.

In the ferrous and non-ferrous metal-working plants, outside of automobiles and railroad repair shops, the decrease in rate of operations during June amounted to 8.2 per cent, as compared with May, bringing the rate of operations down to a point 25.5 per cent below that of June of last year. The June rate of operations in these plants was the lowest since December, 1927.

Activity in railroad repair shops dropped materially during June, reaching a point 5.7 per cent below that of May and 12.7 per cent below that of June of last year. These shops are now operating at the lowest rate since August, 1928.



American Machinist Metals Congress Booth

Assignment of Booth 15F to *American Machinist* for the National Metal Exposition, in Chicago from Sept. 22 to 26, was recently announced. This booth is at the right of the main entrance from the main lobby of the Stevens Hotel and on the west corridor of the lobby leading to the exhibition hall. *Product Engineering* will occupy the booth with *American Machinist*. The show will be held in the exhibit hall and foyer, the main ballroom, the lounge, the writing room, and the main dining room of the hotel, a total of 42,000 sq.ft.

Trade Practice Revision Postponed Until September

WASHINGTON CORRESPONDENT

The Federal Trade Commission has concurred in the request of industrial groups that the revision of trade practice codes should be suspended until after they have had an opportunity to discuss the practical problems involved at a meeting scheduled for the last week in September at Niagara Falls, Ont. Abram F. Myers, chairman of the standing committee of the industries which have held trade practice conferences, has been advised by the Commission that all industries whose trade practice conference rules will be changed or modified by the Commission will have 30 days from Sept. 25 in which to file written objections.

Machine Age Exhibit To Open in Fall

A temporary exhibit depicting the rise of the "Machine Age" will be opened by the Museums of Peaceful Arts in their new quarters at 220 East 42nd St., New York, N. Y. on Sept. 12, 1930. The exhibit, prepared by some hundred American corporations and individuals, will last until November 15, and will stress the importance of machines, machine tools, and metallurgy in the progress of civilization.

Amtorg Purchases Show Gain in June

The Amtorg Trading Corporation, New York, announced on July 10 that during the month of June it placed orders in the United States for shipment to the Soviet Union to a total value of $4,255,500. This represented a gain of 46 per cent over the Amtorg purchases in May, but was a third below the orders placed in June, 1929. While the purchases of the Amtorg Trading Corporation during the first half of the current Soviet fiscal year, beginning Oct. 1, 1929, amounted to $59,974,000 and were more than three times those for the corresponding six months of the preceding fiscal year, orders placed in the following three months totaled $10,402,000 and were 3 per cent less than the purchases made in the same three months of 1929. Purchases of industrial and electrical equipment, the most important group of Soviet purchases in this country, amounted to $2,809,000 in June, a gain over May.

THE INDUSTRIAL REVIEW

Weekly progress of the machinery and machine-tool business

THE following reports, gathered from the various machinery and machine-tool centers of the country, indicate the trend of business in these industries and what may be expected from the future:

CLEVELAND

Midsummer finds the local machine-tool market at its lowest ebb. Business for the last ten days, combined with the July 4 holiday, has fallen below the previous ten days. Inquiries too, are declining steadily. Orders come from general industrial users and are for emergency purposes. About the only feature was the recent purchase by the Ohio Rubber Co. of a large punch press. A few dealers report that sales for the first half of this year show a decline to 50 per cent under last year. Production is being tapered off during the summer. A statistical report issued by the Building Commissioner of Cleveland shows that building permits issued for factory construction for 1930 show a ten per cent increase over last year.

PHILADELPHIA

An improvement in the general tone of the machinery and machine-tool business was noted throughout the Philadelphia market during the last two weeks. A more hopeful outlook for the future was taken as various shops and sales agencies prepared for a gradual resumption of orders, between now and Sept. 1, at which time the prediction is made that there will be a marked tendency toward betterment all around.

The radio industry was the bright spot. Buyers for drills and other shop equipment came into the market, and manufacturers of bearings had some replacement orders from automotive producers and a few sales to the aircraft industry.

Some manufacturers reported there are some sizable orders, which may close soon.

NEW ENGLAND

New England industry took advantage of the July holiday to extend vacations for entire plants, not only over the weekend but through the present seven-day period. Conditions hereabouts are not conducive to high-powered optimism.

A contrary instance is a Connecticut manufacturer, experiencing an uninterrupted low level of business received in a week more orders than in May and June combined. In addition the situation offers other favorable tendencies. Industrial construction holds up fairly well with some promise of orders. Outstanding school projects at Providence and Pawtucket will include equipping metal-working and woodworking departments.

Generally the low ebb of business throughout this field, however, has resulted in the poorest midsummer trading experienced by the industry in a number of years.

CINCINNATI

During the past week, machine-tool manufacturers of the Cincinnati district found the market dull, but there was no further recession. The laying-off of men is being avoided by making reductions in working time, and for this reason there is no serious unemployment. Some manufacturers are planning to give all employees a vacation.

Selling agents report that while there was little or no change in the demand in local and adjacent territory they find encouragement in that they were able to develop a number of excellent prospects, especially in special machines.

VACATIONS and extensions of the holiday of the preceding week are two additional reasons for the more-than-usual summer slowness of the machinery and machine-tool markets of the country, accentuated during the present year by the reluctance of prospects to become purchasers. Somehow or other, the companies who cried lustily for tools last year and invented new epithets for machine dealers and manufacturers who could not then supply their wants immediately are now not nearly so vocal. Used tools share the lack of buyers; postmen bring bills but no inquiries.

CLEVELAND reports the market at its lowest level, with only one or two appreciable sales. Cincinnati is holding its own under reduced working hours and vacations, with few orders for more than one tool. New England exhibits a number of conflicting indications; industrial construction holds up fairly well. Philadelphia's outlook is becoming more cheerful with an increase in orders and in inquiries and a general improvement in the tone of business.

NEW YORK conditions are as they were last week, with the few orders coming in being characterized as "windfalls." Export demand is slow and the General Electric has purchased one tool, otherwise there is an atmosphere of quietude.

CHICAGO reports the machine market an exact antithesis of gangdom, for the machine market is quiet, with only schools lists to bring cheer. Detroit automobile builders have as yet displayed little interest, but there are indications of a business revival. Buffalo trade is inactive but more optimistic.

MILWAUKEE

Conditions in the Milwaukee machinery and machine-tool market have shown very little change. Manufacturers and dealers believe the situation has reached its lowest level, and that an upward curve will be reached by Fall. Present demand is widely scattered and comes from highly specialized lines which are taking small units. The local unemployment situation, based on latest census figures and industrial surveys, shows that this city has a remarkably low average of unemployment.

Taking the machinery and machine-tool trade here as a whole, a note of optimism is quite evident. Business has been holding its own and inquiries are coming in from least expected sources, although mostly from the smaller class of trades.

Used-tool and machinery supply dealers report that orders are few and far between, with practically no buying but fair inquiries.

NEW YORK

Holidays and vacations seem still to be affecting the New York machinery and machine-tool market. The quietude of the week of the Fourth was duplicated during the past week, only a few small orders for special tools, characterized as "windfalls" by one dealer, were reported. One dealer received an order for a shaper from the General Electric Co., which he had quoted on some months ago. There is no indication of a change either up or down at the present time. Export demand is off, and the inquiry list shows little life. The used tool market is listless also. The future probably depends on general business conditions.

CHICAGO

Mid-July finds the machine-tool market on about the same level. Such business as there is continues to be scattering, with inquiries practically limited to replacement needs. Traveling representatives of machinery houses covering the Mid-West states report general industry in this section as inactive, with many manufacturing plants running on a reduced working schedule. Railroads, builders of agricultural machinery and tractors, and automobile manufacturers are restricting their buying to the lowest possible point, and inquiries from these sources are few and far between. About the only lists of any account received during last week came from the Chicago and the Cook County Boards of Education.

DETROIT

In spite of the summer lull in the manufacturing plants here, there are many indications that the machinery and machine-tool trade will experience a revival in the near future. But at the present the automobile industry is in the midst of its usual summer depression, lower this year by reason of the general slump which has been keenly felt here, and there are few deals for equipment being closed. Engineering departments are still working, however, and there are rumors afloat that numerous changes in motor car design will be made this fall.

If the contemplated or talked-of changes are made, it is likely that the last quarter of 1930 will witness something of a reawakening of the machinery business. One representative dealer reports that the year as a whole will be within 20 per cent of last year, and others say the totals will be only a little below normal.

The contract jobbing shops have been idle for several months and will probably continue so for a time. It is believed that August and September will witness a considerable advance.

BUFFALO

While the machine tool trade still shows no increase in activity, some salesmen report that customers are talking in a more optimistic manner than was the case a month or six weeks ago.

Sales of two boring mills are reported to the Worthington Pump & Machinery Corporation, and this constitutes one of the bright spots in the local situation. Now and then small orders for single machines are placed, but business compares poorly with that of a year ago.

BUSINESS • BAROMETER

First sign of an upturn in staple markets will mark a radical change in the situation

THEODORE H. PRICE
Editor, Commerce and Finance, New York

IT IS said that a bushel of rye or a bushel of oats can now be purchased for less money than a bushel of sawdust. The statement, if true, proves nothing except that there is a better demand for sawdust than for rye or oats. There is no reason why sawdust should not be worth much more than cereals if some way of converting it into food can be found. The comparative value of the three articles depends entirely upon their adaptability to our needs.

Nevertheless, the statement quoted has been given wide circulation, and it is cited as fresh proof of the depression about which everyone is talking so much. The fact that sawdust is generally regarded as a waste product is supposed to indicate that the products of human industry in general are selling at sawdust prices.

It is a strange case of misinterpretation. So many new uses for sawdust have been found that it has become exceptionally valuable, and in some cases it is worth more than the timber from which it is derived. But this makes no difference. The world has on its dark glasses at present, and will continue to look gloomy until the medium through which we are looking is changed.

Meanwhile the great backlog of cheap money continues to smolder on the andirons, and flares up whenever there is the slightest draft. That it will commence to burn persistently sooner or later is a foregone conclusion; the only question is "When."

Domestic trade is neither very good nor very bad. As compared with last year it is poor, but it is very nearly up to the figures of 1928, and comparison with last year would look more favorable if it were not for the low prices at which commodities are selling.

These low prices continue to be the keynote of the situation so far as this country is concerned. They limit the purchasing power of the agricultural states, and disseminate a feeling of gloom that pervades the entire country.

Wheat and the grains generally have been weak. Rubber, silk, sugar, and coffee have not shown much rallying power. Cotton has surprised the trade by the steadiness that it manifested in the face of a bearish Government acreage report, and there is a growing realization that the potential short interest is enormous in both the cotton and the cotton goods markets.

The steel industry is supposed to be running at about 65 per cent of capacity, but the reduction of 91,000 tons in unfilled orders as of July 1 is less than half of what had been expected, and an improvement is looked for as soon as the summer holidays are over.

The Census Reports as published are attracting a great deal of attention. One bulletin issued last week shows a lessening of nearly 50 per cent in the infant mortality rate of the country taken as a whole. If human life is worth anything at all, this means an enormous addition to our national wealth. This is a fact that should not be lost sight of by those who take a long-distance view of our economic future. It takes patience, however, to calculate upon and to wait for the results shown by the mortality tables, and most American business men prefer to follow methods which will secure quicker results. Hence they chafe at inactivity and forget that in industry the best results are obtained from a factory that is located outside a city, and away from the noise and turmoil of a great manufacturing center. So it is with the United States. Our people think they are happier and better when they are working in close association, with elbows touching elbows, and every chance for the creation of friction. This is not ideal, but we are slowly progressing toward greater separation of manufacturing establishments.

We can, however, improve upon our present methods in many respects. One is by keeping ourselves in readiness to buy the raw material that we need when it can be bought at or below the cost of production. This seems to be the case at present with a long list of articles, including sugar, rubber, cotton, coffee, silk, hides, steel, and most of the grains.

The first sign of an upturn in the market for one or more of these staples will probably mark a radical change in the whole situation. For this we must watch as a fowler for the bird that he is hunting, and we can be reasonably sure of a prolonged rise in the tide once it turns.

In England, the Labor government has escaped overthrow from a Conservative-Liberal onslaught by a margin of three votes, four Liberals voting with the government in defiance of Lloyd George, who now seems to regret the adventure. In China the Nationalist government at Nanking still lives, but though its prospects seem brighter than they were, its fate is still decidedly uncertain. In India the Viceroy's speech, in which he declared the Simon report to be merely advisory and of no binding force on the coming round-table conference, which would be entirely free in its decisions, has left the press sharply divided. "The Light of Asia" still shines, but its effulgence is somewhat dimmed.

THE BUSINESS WEEK

July 16, 1930

THE CHARACTERISTIC SIGNS of the process of business recovery appear more clearly this week. . . . Basic industries farthest from the consumer, like steel and coal, which decline or rise last and furthest, continue more than seasonally slack. Electric power production and primary distribution by railroad are still at low levels, but begin to show slight improvement. . . . Building construction has increased sharply, above normal and above last year's level. General trade, as measured by check payments and currency in circulation, has risen to relatively high levels. . . . Bank credit is expanding at a more than normal rate. Federal Reserve credit is being brought into action on a larger scale. Commodity prices are firmer. The stock market is steadier and quiet. . . . The sharp rise in our index of the volume of general business activity nearly to the normal level in the past two weeks is partly a reflection of the markedly higher level of building activity and the large volume of money turnover at the end of June. . . . We expect some backsliding in coming weeks, but continue confident that the general trend is upward and the underlying conditions favorable for early recovery. Some support may be needed and should be given the key crops, wheat and cotton, in this critical season, to prevent further slump in the commodity price level.

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PERSONALS

K. G. MacKenzie, consulting chemist for The Texas Company, New York City, was elected president of the American Society for Testing Materials at the recent annual meeting. Cloyd M. Chapman, consulting engineer of New York City, was elected vice-president. Members of the executive committee include: G. A. Reinhardt, director of metallurgy and research, Youngstown Sheet & Tube Company; H. N. Van Deusen, materials engineer, Bell Telephone Laboratories; Zay Jeffries, consulting metallurgist, Aluminum Company of America; H. H. Quimby, consulting bridge engineer, Philadelphia; and F. H. Jackson, senior engineer of tests, U. S. Bureau of Public Roads.

K. G. MACKENZIE

John E. Edgerton, president of the National Association of Manufacturers, made the baccalaureate address at the commencement of the University of Florida, Gainesville, on June 2. Coincidentally came the announcement by Dr. John J. Tigert, president of the university, of the creation of the Institute of Inter-American Affairs, with Mr. Edgerton included on the advisory board.

William H. Jackson, Axelson Aircraft Engine Co., Los Angeles, was chosen as a vice-president of the National Association of Purchasing Agents at their recent convention in Chicago. F. H. MacKnight, Westinghouse Air Brake Co., Wilmerding, Pa., was also chosen a vice-president.

James R. White has been elected a vice-president and director of sales of Jenkins Bros., 80 White St., New York City, according to a recent announcement by the board of directors.

E. J. Stanek, head of the Stanek Tool & Manufacturing Co., Milwaukee, Wis., has returned from a European trip on which he visited his birthplace in Moravia, Czecho-Slovakia.

Edward Corner has been appointed manager of the Montreal office of the Hamilton Gear & Machine Co., succeeding the late E. C. Dingman. Mr. Corner will be in charge of the organization of the company's business in the province of Quebec.

Paul B. Johnston has become a member of the sales department of the Clark Controller Co., Cleveland, under W. H. Williams, sales manager.

William Gutenkunst, president of the Milwaukee (Wis.) Malleable & Gray Iron Co., and the Milwaukee Hay Tool Co., celebrated his eightieth birthday anniversary July 6.

James E. MacMurray, for 20 years president of the Acme Steel Co., Chicago, and James R. Cardwell, president of the Union Draft Gear Co. and the Cardwell-Westinghouse Co. and a director of the Grigsby-Grunow Co., have been elected directors of the First National Bank in Barrington, Ill.

William Stringham, assistant general superintendent, East works, American Rolling Mill Co., Middletown, Ohio, has been made assistant vice-president. Mr. Stringham became affiliated with the company in 1901 as a roller in Central works, Middletown.

W. W. Peacock, formerly identified with the Niles Tool Works and the Motch & Merryweather Machinery Co., in the Pittsburgh office, has become associated with the machine tool department of Joseph T. Ryerson & Sons, Inc. at Pittsburgh.

Kemper K. Knapp, Chicago, counsel for a number of railroads and well known in the steel industry, received an honorary degree at the annual commencement of his Alma Mater, the University of Wisconsin, on June 23.

Fletcher Crawford has been made district representative at Rockford, Ill., for E. P. Bartlett Co., Chicago. Mr. Crawford is also manager of the Blackhawk Steel & Iron Co., Mead Bldg., Rockford.

G. A. REINHARDT

J. E. Huffman, Madison, Wis., in association with Genoa, Ill., business men, has completed arrangements to transfer his metal products plant to the old Selz Shoe Co. factory in Genoa.

H. N. VAN DEUSEN

R. J. Welsh, Atlanta, Ga., has been appointed representative in that territory of the Chicago (Ill.) Pump Co.

Edward S. Evans, president of Detroit Aircraft, has announced the election by the board of directors of A. D. Mage as secretary-treasurer.

OBITUARIES

Waldo C. Bryant, chairman of the board of the Bryant Electric Co., and pioneer in the electrical industry, died on July 5 at Colorado Springs, Col., following a serious operation. He was the inventor of a great number of electrical devices and was District Chief of Ordnance for the State of Connecticut and four counties in Western Massachusetts during the war, having charge of the production of munitions, guns, and materiel for that district.

William A. Montgomery, 76, founder of the North East Electric Co., Rochester, N. Y., died there on July 10. Mr. Montgomery was president of North East Appliances, Inc., a subsidiary. He had been ill for six months.

William Marshall, 65, for many years superintendent of the Elgin (Ill.) Manufacturing Co., and one of the best-known mechanics in the Middle West, died on July 1. Mr. Marshall retired in 1925, after serving as superintendent for 25 years.

James W. Roulston, vice-president of Stedfast & Roulston, Boston, Mass., died on July 2, at his home in South Boston. Mr. Roulston entered the employ of the present Stedfast & Roulston organization more than 40 years ago when it was known as Hill, Clark & Co.

Joseph A. Price, 60, foreman at the Pheonix Horseshoe Co., Joliet, Ill., former superintendent of the Frederick Cowan Co., Joliet, and prior to that general superintendent of the Interstate Steel & Iron Co., East Chicago, died on July 1, in Joliet.

Henry Dreses, founder and former president of The Dreses Machine Tool Co., Cincinnati, died recently in Europe. Mr. Dreses sold out his interest in this company early in the war to Chas. E. Gilbert, who is now president.